NOVEMBER 10, 1956 PAGES 951 TO 1004

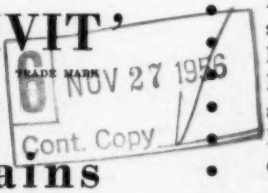
Sec. 8

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2
Telegrams: LANCET, RAND, LONDON Telephone: TEMPLE BAR 7228 and 7229

No. XIX OF VOL. II, 1956 LONDON, SATURDAY, NOVEMBER 10, 1956 Pp. 128—Price 1s. 6d.
No. 6950 VOL. CCLXXI Founded 1823 PUBLISHED WEEKLY Registered as a Newspaper Annual Subscription: £3 3s.

'PERNIVIT'
TRADE MARK
for chilblains



Effective both in treatment and in the subsequent prevention of chilblains. Pernivit Tablets contain nicotinic acid B.P. (25 mg.) for its vasodilator action and acetomenaphthone B.P. (vitamin K analogue) (7 mg.) for its influence on blood coagulability.

Basic N.H.S. price, Bottles of 50 tablets 2/-

Literature and specimen packings will be supplied on request.

THE BRITISH DRUG HOUSES LTD. LONDON N.1

Recently Issued

THE GENESIS AND PREVENTION OF CANCER

By W. SAMPSON HANDLEY, M.S., F.R.C.S.
Consultant Surgeon to the Middlesex Hospital

Second Edition with 2 new chapters 21s. net

Comfort-Crookshank Prize 1954

London: John Murray. New York: The Macmillan Co.

IN THE MENTAL HOSPITAL

Eleven articles reprinted from THE LANCET.

A group of articles chiefly concerned with the value of active occupation and work for mental patients and the means whereby it is best provided.

72 pages. Price 2s. 6d. (postage 4d.)

The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

THE LAW AND ETHICS OF DENTAL PRACTICE

By R. W. DURAND, M.R.C.S., L.R.C.P.
Formerly Secretary of the Medical Protection Society
and
D. MORGAN, L.D.S. (Leeds)
Formerly Deputy Dental Secretary of the British Dental Association

Foreword by Professor R. V. BRADLAW, M.D.S. Dunelm, F.D.S., M.R.C.S. Eng.
Professor of Oral Pathology, Durham University
Director, Newcastle-upon-Tyne Dental School

Expert guidance on the many problems which confront the dentist

Demy 8vo 98 + viii Price 7s. 6d. net, plus 7d. postage

Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

INTO GENERAL PRACTICE

A Guide for Beginners and Others

By J. G. THWAITES, M.B., B.S.

". . . gives sound advice about the organization of a practice and the obligations of a general practitioner under the National Health Service."—*British Medical Journal.*

232 pages 12s. 6d. net

Wm. Heinemann Medical Books Ltd., Gt. Russell-street, W.C.1

Third Edition

INTRODUCTION TO DISEASES OF THE CHEST

By JAMES MAXWELL, M.D.(Lond.), F.R.C.P.(Lond.)
Physician, Royal Chest Hospital; Physician to the Ministry's Mass X-ray Unit; Consulting Physician, Royal National Sanatorium, Bournemouth; late Physician, St. Bartholomew's Hospital.

Demy 8vo 303 + xii 66 Half-tone Illustrations

12s. 6d. net, plus 1s. 4d. postage.

Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

THE ESSENTIALS OF FORENSIC MEDICINE

By CYRIL JOHN POLSON, M.D., F.R.C.P.
Barrister-at-Law; Professor of Forensic Medicine, University of Leeds.

"It is superbly done, for he writes well, lucidly, and sanely, weaving the vivid and the more mundane chapters of forensic medicine, medical ethics, law and insanity into a comprehensive whole that is both informative and readable."—*The Lancet.*

562 pages 30s. net, plus 1s. 6d. postage

The English Universities Press Ltd., 102, Newgate-street, London, E.C.1

Forthcoming

THE INFANTILE CEREBRAL PALSIES

By Members of The Little Committee, Queen Mary's Hospital for Children, Carshalton, Surrey.

The authors hope that this work, based upon long experience and close observation of infantile cerebral palsy, will provide a foundation of management upon which those concerned with its problems, whether as doctors, teachers or parents, may confidently build.

List of Contributors:— Eirene Collis — W. R. F. Collis — William Dunham — L. T. Hilliard — David Lawson
Foreword by Sir Francis Walshe.

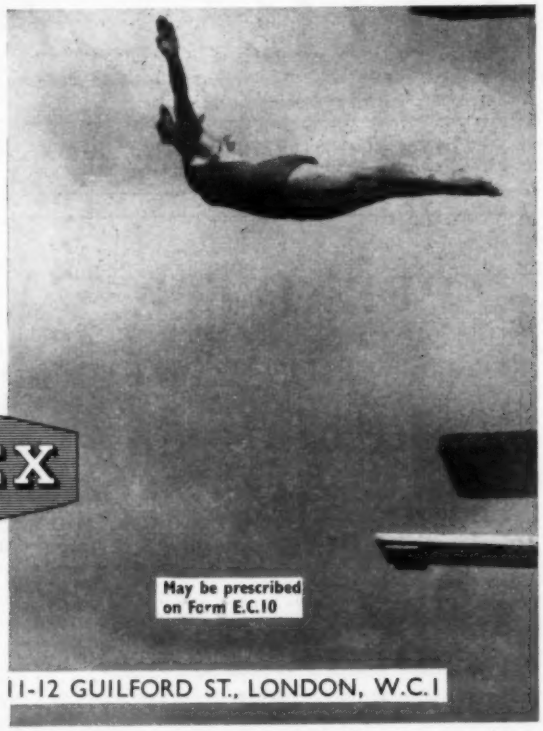
112 pages 15s. net

Wm. Heinemann · Medical Books Ltd. · 99 Great Russell Street · London W.C.1

(*Distributors in the U.K. of the Medical Books of Grune & Stratton Inc., New York*)

ENCYNEX consists of coated tablets each containing:

para-Aminobenzoic Acid	32.5 mg.
Sodium Salicylate ..	150.0 mg.
Sodium Bicarbonate ..	60.0 mg.
Phenacetin ..	150.0 mg.



For high level plasma salicylate...

ENCYNEX

In Rheumatic Disease

May be prescribed on Form E.C.10

Distributors:
THE ANGLO-FRENCH DRUG CO. LTD. 11-12 GUILFORD ST., LONDON, W.C.1

for the relief of TENSION

'MYANESIN'
TRADE MARK

ELIXIR & TABLETS

Carefully controlled experiments have demonstrated that muscle tension is greater in anxious patients than in healthy persons. The more severe the symptoms of anxiety the greater is the tension in the muscles.

It is now becoming recognised that many cases diagnosed as psychogenic rheumatism are in fact cases of anxiety-induced muscle tension and can therefore logically be treated with Myanesin Elixir and Tablets.

The suggested dosage is—One tablespoonful or two tablets four times daily.

Myanesin Elixir and Tablets are also valuable in the treatment of:—

Backache, Headache, Bronchial Asthma, Neurodermatoses, Dysmenorrhoea, Premenstrual Tension	One tablespoonful or two tablets four times daily
Insomnia, Nocturnal Cramp	One tablespoonful at night

'MYANESIN' ELIXIR
One gramme mephenesin in each tablespoonful
Bottle of 8 fl. oz. 4/6 Bottle of 40 fl. oz. 18/6

'MYANESIN' TABLETS
Each containing 0.5 gramme mephenesin
Bottle of 50 at 6/10 Bottle of 500 at 56/-
Basic N.H.S. prices

THE BRITISH DRUG HOUSES LTD. LONDON N.1

NOV. 10, 1956 PAGES 951 TO 1004

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, PATHOLOGY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6950 LONDON: SATURDAY, NOVEMBER 10, 1956 CCLXXI

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

Bacteriology in Modern Medicine — Prof. J. W. HOWIE, M.D. 951

Sex-hormone Excretion after Bilateral Adrenalectomy and Oöphorectomy in Patients with Mammary Carcinoma — J. A. STRONG, M.R.C.P.; J. B. BROWN, PH.D.; Prof. JOHN BRUCE, F.R.C.S.E.; MARY DOUGLAS, M.D.; A. I. KLOPPER, M.R.C.O.G.; J. A. LOBAINE, M.R.C.P.E. ... 955

Recent Evolution and Spread of Strains of Influenza-A Virus — A. ISAACS, M.D. 960

Megimide in the Treatment of Barbituric-acid Poisoning — ASGER LOUW, M.B.; L. M. SONNE, M.D. 961

Arousing Effect of Megimide and Amiphenazole — JEPPE PEDERSEN, M.B. 965

Effect of Megimide and Amiphenazole on Respiratory Paresis — CARL CLEMMESEN, M.D. 966

Delirious Psychosis and Convulsions due to Megimide — J. KJÆR-LARSEN, M.B. 967

Blood-groups in Relation to Malignant Diseases — W. W. WALTHER, M.B.; C. RAEBURN, M.R.C.S.; J. CASE, F.I.M.L.T. 970

Strangulated Duodenal Hernia Complicating Partial Gastrectomy — LESLIE SIMON, F.R.C.S. 972

An Unusual Complication of Bladder Diverticulum — I. J. GORDON, F.R.C.S. 974

PRELIMINARY COMMUNICATION

5-Hydroxytryptamine Excretion in Patients with Carcinoma of the Larynx and Bronchus — Prof. E. BOYLAND, D.SC.; J. E. GASSON, F.R.C.S.; D. C. WILLIAMS, PH.D. 975

PUBLIC HEALTH

Poliomyelitis 988

Infectious Diseases in England and Wales 988

LEADING ARTICLES

HOSPITAL STERILISERS 979

TREATMENT OF BARBITURATE POISONING 980

HORMONES OF THE ADRENAL MEDULLA 981

ANNOTATIONS

Finishing the Job 982

Spread of Bronchial Carcinoma 982

Partial Nephrectomy 983

Phage-typing 983

The Anatomy of Emotion 984

MEDICAL SOCIETIES

Association of Clinical Pathologists and Association of Clinical Biochemists 976

Manchester Medical Society 977

SPECIAL ARTICLES

Industrial Rehabilitation of Mental Patients Still in Hospital — MAXWELL JONES, M.R.C.P.E. 985

The Disabled 986

CONFERENCES AND CONGRESSES

Epidemiology and Control of Rheumatic Fever 989

LETTERS TO THE EDITOR

Advertisements for Drugs (Dr. W. J. Walkden) 992

The Rôle of the Pædiatrician (Prof. N. B. Capon, F.R.C.P.) 992

"Nottingham Meningitis" (Dr. G. Hesling) 993

Biligrafin for Hysterosalpingography (Dr. D. T. O'Driscoll) 993

Omission of Prescribed P.A.S. (Dr. W. H. Helm) 993

Interaction of Depolarising and Non-depolarising Relaxants (Dr. H. C. Churchill-Davidson) 993

Rupture of Abdominal Aorta Simulating Renal Colic (Dr. Z. S. Lewicki) 994

Re-filling of Practice Vacancies (Dr. Isaac Rose) 994

Investigations for Practitioners (Mr. Michael James, F.R.C.S.) 994

Terra Sigillata (Dr. M. H. A. Davison) 994

Cortisone Acetate in Chronic Asthma (Dr. A. B. Sclare) 994

Medical Education (Dr. T. H. Howell) 995

The Use of Plasma (Mr. Ruscoe Clarke, F.R.C.S.) 995

Endobronchial Tuberculosis in Children (Dr. R. M. E. Seal, Mr. D. M. E. Thomas, F.R.C.S.) 995

The Use of Liquorice in Weight Reduction (Dr. B. James) 996

Anarthritic Rheumatoid Disease (Dr. L. Bagratuni) 996

Nikethamide in Rheumatoid Arthritis (Dr. D. Mattingly) 996

Walking-aids (Dr. G. W. Piper) 997

Urea Metabolism in Protein Deficiency (Dr. W. S. S. Ladell) 997

Chorea Gravidarum (Dr. P. B. B. Gatenby) 997

Gas Gangrene After Injection (Dr. J. H. Bowie) 997

Hypercalcæmia of Infancy (Dr. D. M. Evans) 998

Ruptured Umbilical Hernia (Dr. M. G. Jones) 998

Intestinal Obstruction By Food (Dr. S. I. Davies; Dr. D. F. MacCarthy) 998

The Extra Shillings (Mr. D. R. Matthews, M.P.S.) 999

Triiodothyronine in Myxœdema Coma (Dr. A. Anderson, Dr. W. Hausmann) 999

Clinicosis (Dr. H. P. Burrowes; Dr. M. H. F. Coigley; Dr. Elizabeth Tylden) 999

REVIEWS

Notices of Books 978

MEDICINE AND THE LAW

Head Injuries as a Cause of Suicide 988

PARLIAMENT

Question Time 990

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents 991

OBITUARY

John Cecil Cruickshank 1001

Gerald Edward Friend 1002

Vladimir Filatov 1002

Dr. A. E. Barnes 1002

ORAL ANTIHYPERTENSIVE

Serpasil*

pure crystalline reserpine from Rauwolfia

REDUCES MENTAL TENSION AND STRESS IN

HYPERTENSION and ANXIETY STATES

* *Reg. Trade Mark. Reg. User.* CIBA LABORATORIES LIMITED, HORSHAM, SUSSEX. *Tel: 4321*

5/5

Diabetic Neuropathies

Complications involving the nervous system have long been recognized as a feature of diabetes. In cases where the peripheral nerves are affected, administration of the whole vitamin B complex is sometimes advocated. The therapeutic response to the entire B complex has been found to be considerably better than to thiamine alone. Although the parenteral route is recommended in the early stages of treatment, oral administration may be sufficient later.

Marmite yeast extract supplies all known factors of the vitamin B complex in a palatable form. It can be incorporated readily in the diabetic diet and, as it contains only a negligible quantity of carbohydrate, it need not be taken into the dietary calculations.

MARMITE
yeast extract

RIBOFLAVIN (*vitamin B_2*) 1.5 mg. per oz. NIACIN (*nicotinic acid*) 16.5 mg. per oz.
MARMITE LIMITED, 35, SEETHING LANE, LONDON, E.C.3.
5610

ASTHMA
Instant relief!

Ever increasing numbers of medical men are relying on Rybarvin Inhalant to combat bronchospasm. The Ministry of Health having agreed to the prices of Rybar asthma inhalants, Rybarvin can be freely prescribed.

RYBARVIN brings relief. Consistently, often spectacularly, attacks are cut short and their frequency lessened. Free from excess acid, non-irritant and non-habit-forming it is an ideal inhalant for all asthmatics young and old.

Formula	
Pituitary Extract. Posterior and Anterior Lobe	0·40% w/v
Methylatropine Nitrate	0·14% w/v
Papaverine	0·08% w/v
Adrenaline	0·40% w/v
Ethyl Para-aminobenzoate	0·20% w/v
Iso-butyl Para-aminobenzoate	0·01% w/v

RYBAR INHALER has been specially designed for aerosol therapy. Both Rybarvin and the Inhaler may be prescribed on N.H.S. Form E.C.10.

Samples and details of trial outfits forwarded on request.

RYBAR
LABORATORIES LTD.
TANKERTON · KENT

ADVERTISED AND INTRODUCED *ONLY* TO THE MEDICAL PROFESSION

PULMO-BAILLY B

Constituents	*Properties*
GUAIACOL	*Antiseptic, Leucocytogenetic and Expectorant*
CODEINE	*Cough Sedative*
PHOSPHORIC ACID	*Tonic and Restorative*

PULMO-BAILLY restrains Broncho-pulmonary infection, facilitates elimination of bronchial secretions, soothes irritating and fatiguing cough, restores appetite, nervous and physical tone.

IMPORTANT IN
BRONCHITIS AND BRONCHO-PULMONARY AFFECTIONS, INFLUENZA, BRONCHIECTASIS, TRACHEITIS, CHEST CONGESTION OF THE AGED

BASIC N.H.S. PRICES—90 c.c. bottle **2/10** plus **10d.** P.Tax.
16 fluid oz. bottle **11/6** net. 80 fluid oz. bottle **45/-.**

Clinical Sample and Literature on request
BAILLY LTD., LONDON

Sole Concessionaires: **BENGUE & CO. LTD.,** *Manufacturing Chemists*
MOUNT PLEASANT · ALPERTON · WEMBLEY · MIDDLESEX

H. K. LEWIS'S PUBLICATIONS

80th Thousand. Tenth Edition. With 1411 Illustrations (271 Coloured). 9¾ in. × 6⅝ in. **£4 4s. 0d.** net.

A SHORT PRACTICE OF SURGERY

By **HAMILTON BAILEY,** F.R.C.S. (Eng.), F.R.S.E., Emeritus Surgeon, Royal Northern Hospital, London, and **R. J. McNEILL LOVE,** M.S. (Lond.), F.R.C.S. (Eng.), Surgeon, Royal Northern Hospital; with Chapters by **JOHN CHARNLEY,** F.R.C.S. (Eng.), Orthopædic Surgeon, Manchester Royal Infirmary, etc., **WILLIAM P. CLELAND,** M.R.C.P. (Lond.), F.R.C.S. (Eng.), Surgeon, Brompton Chest Hospital, etc., and **GEOFFREY KNIGHT,** F.R.C.S. (Eng.), Senior Surgeon, West End Hospital for Neurology and Neuro-surgery.

"... an old and valued students' friend: dogmatic, concise, profusely illustrated, and immensely helpful ..."
—LANCET.

Recently published. Third Edition. 8½ in. × 5½ in. **£3 10s. 0d.** net; postage 1s. 9d.

LAW RELATING TO HOSPITALS AND KINDRED INSTITUTIONS

By **S. R. SPELLER,** LL.B., of Lincoln's Inn, Barrister-at-Law, Secretary and Director of Education, Institute of Hospital Administrators.

BIOCHEMICAL INVESTIGATIONS IN DIAGNOSIS AND TREATMENT
By **J. D. N. NABARRO,** M.D., M.R.C.P. With Illustrations. 8½ in. × 5½ in. **£1 5s. 0d.** net; postage 1s. 4d.

LYLE AND JACKSON'S PRACTICAL ORTHOPTICS IN THE TREATMENT OF SQUINT and other anomalies of Binocular Vision
By **T. KEITH LYLE,** M.A., M.D., M.Chir., M.R.C.P., F.R.C.S., assisted by **MARIANNE WALKER,** D.B.O.(T.). Fourth Edition. With 195 Illustrations (including 3 Coloured). 10 in. × 7½ in. **£3 3s. 0d.** net; postage 1s. 6d.

THE PRINCIPLES AND PRACTICE OF RECTAL SURGERY
By **W. B. GABRIEL,** M.S. (Lond.), F.R.C.S. (Eng.). Fourth Edition. With Coloured Plates and other Illustrations. 9¾ in. × 6½ in. **£2 5s. 0d.** net; postage 1s. 6d.

THE SULPHONAMIDES AND ANTIBIOTICS IN MAN AND ANIMALS
By **J. STEWART LAWRENCE,** M.D. (Edin.), M.R.C.P., and **JOHN FRANCIS,** B.Sc., M.R.C.V.S., with the assistance of **A. SORSBY,** M.D., F.R.C.S., and **PHILIP SCOTT,** F.R.C.S. Second Edition. With 39 Illustrations. 8½ in. × 5½ in. **£2 2s. 0d.** net; postage 1s. 6d.

Recently published. With 85 Illustrations. 9¾ in. × 6½ in. **£2 7s. 6d.** net; postage 1s. 5d.

THE CONTROL OF DISEASE IN THE TROPICS

By **T. H. DAVEY,** *O.B.E.*, M.D., D.T.M., Professor of Tropical Hygiene, University of Liverpool, and **W. P. H. LIGHTBODY,** *C.B.E.*, L.R.C.P., L.R.C.S. (Ed.), L.R.F.P.S. (Glas.), D.T.M. & H. (Camb.), D.P.H. (Glas.), Senior Lecturer of Tropical Hygiene, University of Liverpool.

With 3 Coloured Plates and 120 Text Illustrations. 9¾ in. × 6½ in. **£1 7s. 6d.** net; postage 1s. 3d.

GUIDE TO HUMAN PARASITOLOGY for Medical Practitioners

By **D. B. BLACKLOCK,** M.D., D.P.H., and **T. SOUTHWELL,** D.Sc., Ph.D. Fifth Edition, revised by Professor **T. H. DAVEY,** *O.B.E.*, M.D., D.T.M.

PRACTICAL UROLOGY: Case Comments and Late Results
By **ALEX E. ROCHE,** M.A., M.D., M.Ch. (Camb.), F.R.C.S. (Eng.). With 132 Illustrations. 8½ in. × 5½ in. **£1 15s. 0d.** net; postage 1s. 6d.

SIGHT, LIGHT AND EFFICIENCY
By **H. C. WESTON,** Director of Group for Research in Occupational Optics and Secretary of the Vision Committee, Medical Research Council, etc. With 132 Illustrations. 9¾ in. × 6½ in. **£2 2s. 0d.** net; postage 1s. 6d.

FOOD HYGIENE
By **Wm. CLUNIE HARVEY,** M.D., D.P.H., F.R.San.I., and **HARRY HILL,** F.R.San.I., A.M.I.S.E., "Ollett" Gold Medallist, 1932. 9¾ in. × 6½ in. **£1 15s. 0d.** net; postage 1s. 3d.

MILK: PRODUCTION AND CONTROL
By **Wm. CLUNIE HARVEY,** M.D., D.P.H., F.R.San.I., and **HARRY HILL,** F.R.San.I., A.M.I.S.E., F.S.I.A. 9¾ in. × 6½ in. **£2 17s. 6d.** net; postage 1s. 8d.

PHYSICIAN'S GUIDE TO CHEMOTHERAPY
By **PETER N. SWIFT,** M.R.C.P. (Lond.). 8½ in. × 5½ in. **15s.** net; postage 7d.

BASIC PRINCIPLES OF VENTILATION AND HEATING
By **T. BEDFORD,** D.Sc., Ph.D., M.I.Min.E. With 123 Illustrations. 8½ in. × 5½ in. **£1 5s. 0d.** net; postage 1s. 3d.

REASON AND UNREASON IN PSYCHOLOGICAL MEDICINE
By **E. B. STRAUSS,** M.A., D.M., F.R.C.P., Physician for Psychological Medicine, St. Bartholomew's Hospital. 8½ in. × 5½ in. **8s. 6d.** net; postage 7d.

ON THE OBJECTIVE STUDY OF CROWD BEHAVIOUR
By **L. S. PENROSE,** M.A., M.D., Galton Professor of Eugenics, University College, London. With 2 Graphs. 8½ in. × 5½ in. **10s.** net; postage 8d.

London: H. K. LEWIS & Co. Ltd., 136 Gower Street, W.C.1

Telegrams "Publicavit, Westcent, London" **Telephone: EUSton 4282 (7 lines)**

For the relief of respiratory congestion

An effective inhalant for treating congestion in cases of bronchial catarrh, common cold and bronchitis, Crookes KARVOL Inhalant Capsules clear respiratory tracts rapidly and decrease irritation.

Patients find the ease of application practical; all that is required is to snip off the end of the capsule and squeeze the contents into a handkerchief. No unpleasant reaction is felt on inhaling the vapour, which is antiseptic and will relieve severe bronchial conditions almost immediately.

Contains chlorothymol 0.7%, chlorbutol 6.6%, menthol 7.9% and the essential oils terpineol, oil of cinnamon and oil of pine.

Crookes **KARVOL INHALANT CAPSULES**

Bottle of 20 Capsules 3/4d. (including Purchase Tax) subject to professional discount.

THE CROOKES LABORATORIES LIMITED · PARK ROYAL · LONDON N.W.10

OPENING A NEW AND QUICKER RELIEF FOR SKIN DISORDERS

The effectiveness of **Hydro-Adreson Ointment** is due to

★ *the hydrocortisone being included in*
★ ***the Neutral Base,*** *thus any skin irritation due to acidity or alkalinity is avoided.*
★ ***The Smooth and Pliable Consistency*** *which allows adequate coverage without additional injury from friction to already damaged tissue.*

This special bland base is free from excessive greasiness.

The Hydrocortisone it contains is now the acknowledged treatment of choice in many skin disorders.

Hydro-Adreson effectively reduces hyperaemia and oedema, relieves pain, and dries up exudative areas. By rapidly relieving irritation the ointment reduces the risk of further damage and infection from scratching and speeds the healing of lesions.

Hydro-Adreson (hydrocortisone free alcohol) ointment is supplied in tubes of 5gm. or 15gm. in two concentrations of 1% (10mg. per gm.) or 2·5% (25 mg. per gm.).

ORGANON LABORATORIES LTD.

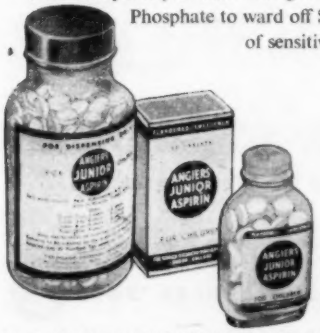
BRETTENHAM HOUSE, LANCASTER PLACE, LONDON, W.C.2.

Telephone: TEMple Bar 6785/6/7, 0251/2. Telegrams: Menformon, Rand, London

When a child needs a sedative.....

Whether for analgesic or anti-pyretic purposes, Angiers is the ideal form of aspirin and readily taken by the youngest patient.

The tiny pink tablets are sweet and orange flavoured, pleasant to suck or chew and easy to swallow. They are promptly effective since they disintegrate as rapidly in the stomach as they do in milk or water. Each tiny tablet contains exactly 1.25 grains of pure Acid Acetylsalicylic with 1.50 grains of Di-Calcium Phosphate to ward off Salicylic-irritation of sensitive little stomachs.



Dispensing pack (500 tablets) 6/-. Also at all chemists in bottles of 50 tablets at 1/7 inc. p.t.

THE JUNIOR ASPIRIN IS

Angiers

Specially made for children

THE ANGIER CHEMICAL COMPANY. Proprietors: Bristol-Myers Company Ltd. LONDON S.E.1.

CVS-21

In the Service...

Research

The House of Wander continues to maintain its advanced position in pharmaceuticals and quality food products because the standardization of active ingredients during manufacture is backed by careful control and investigation in its extensive Research Laboratories.

In Quality

The Wander Research Laboratories have made useful contributions in the fields of dietetics, nutrition and vitamins. Their wide experience and up-to-date laboratory facilities help to maintain the high quality of Malt Extract and Cod Liver Oil (Wander) the vitamin content of which exceeds that of the analogous B.P. preparations.

The special consideration of physicians when prescribing a malt and oil preparation is that of vitamin values. Comparative studies prove that to prescribe "Wander Brand" is to specify malt extract and cod liver oil of the finest possible quality.

In the Service of Medicine

Careful control and investigation help to maintain "Wander Brand" in the forefront of its class. Moreover, with all its special advantages, "Wander Brand" costs no more than some malt and oil preparations with a lower vitamin content.

A. WANDER LTD.
LONDON W.1.

℞ Malt & Oil (WANDER)

M.352

MENOPAUSE
SECONESIN

Seconesin, has proved most suitable for the management of menopausal symptoms. It relaxes and calms emotionally tense and anxious patients without making them drowsy. Subjective improvement, with a sense of well-being, occurs early in treatment in almost all cases.

PACKINGS: Bottles of 25, 100 and 500 tablets.

THE CROOKES LABORATORIES LIMITED • PARK ROYAL • LONDON NW10

CHLORAMPHENICOL INSUFFLATION SET

For Topical use with the Armour Powder Insufflator

INDICATIONS
CHRONIC SUPPURATIVE OTITIS MEDIA
OTITIS EXTERNA
ABSCESS CAVITIES

EACH SET CONTAINS ONE INSUFFLATOR AND ONE TUBE OF 6 CAPSULES EACH 0·125 gm. CHLORAMPHENICOL.

Designed and patented by Armour and Company British Patent No. 668341)

THE ARMOUR LABORATORIES
(*Armour & Company Ltd.*)
HAMPDEN PARK, EASTBOURNE, SUSSEX

Telephone :
HAMPDEN PARK 740
Telegrams :
'ARMOLAB' EASTBOURNE

Gypsona
TRADE MARK

has stood the test of time

Soaks more readily than hand-rolled bandages.

Sets firmly in four to five minutes.

Stronger yet less brittle than ordinary plaster.

Casts have porcelain-like surface.

Casts are porous.

Trimmed edges do not crumble and casts have a neat appearance.

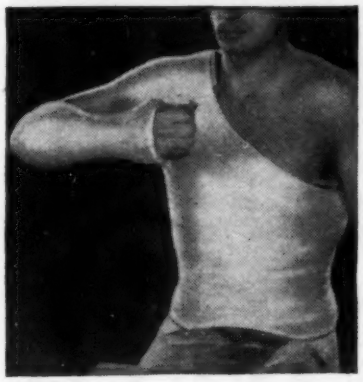
Casts may be bivalved, or cut open and sprung apart without loss of strength.

Exact number of bandages for a particular cast can be determined beforehand.

Special interlocked woven cloth permits easy moulding.

High plaster content—90% of plaster by weight.

Will keep for a very long time without deterioration when stored in a dry place.



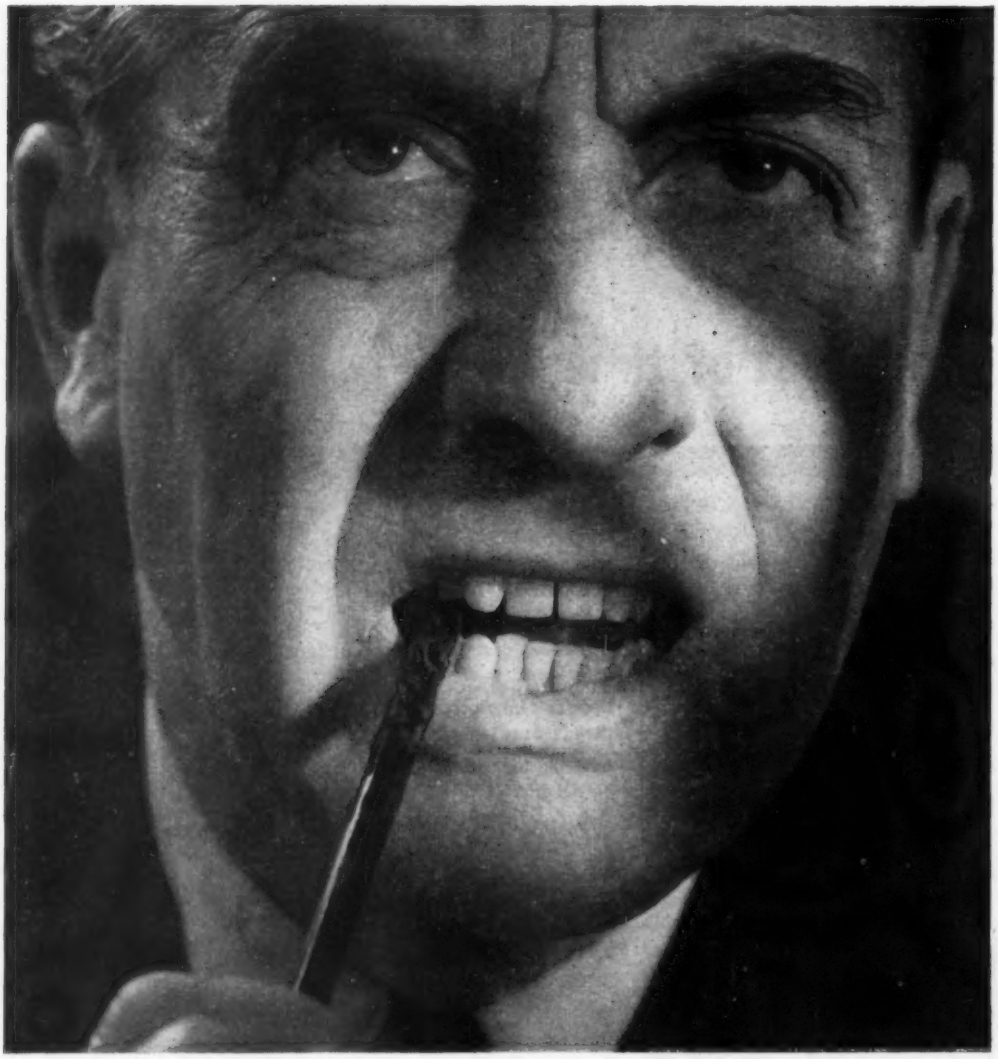
The absence of loose powder and the non-fray edges of the specially-woven leno cloth base of Gypsona bandages provides a distinct advantage over hospital-made bandages.

In performance, the superiority of Gypsona is even more marked. The high plaster content is fixed to the fabric by a special process, and there is a negligible loss of plaster when the bandage is soaked. A surprisingly small amount of material will produce a cast which is light, but of great strength.

Gypsona is by far the most economical plaster for the modern functional treatment of fractures.

SMITH & NEPHEW LTD · WELWYN GARDEN CITY · HERTS 1856 S&N 1956 Gypsona TRADE MARK

ASPECTS OF A CONDITION



A chewed pencil... a small thing perhaps, but the outward sign of an inner disturbance.

Covatin provides daytime sedation without hypnosis · Covatin is to be preferred to phenobarbitone in that it does not interfere with the alertness of the patient · Covatin is not habit-forming and has no side-effects · Covatin is available as 50 mg. sugar-coated tablets in bottles of 50 and 500.

Covatin

TRADE MARK

Formula: p-butylthiodiphenyl-methyl-2-dimethylaminoethyl sulphide hydrochloride

WARNER

C 127/4

WILLIAM R. WARNER & CO. LTD · POWER ROAD · LONDON · W.4.

8

Clearing Congestion

This is the "snuffle" season. Catarrh, blocked sinuses and rhinitis are rife. Congestion is chronic both in patients' noses and doctors' waiting rooms. Yet, with ARGOTONE Nasal Spray you can clear their congestion *and* yours—speedily, safely, surely. Combining the acknowledged vaso-constrictor, ephedrine hydrochloride, and the highly effective antiseptic, silver vitellin, in aqueous isotonic solution, ARGOTONE gives prompt and prolonged nasal patency without rebound congestion. ARGOTONE is tasteless, odourless and quickly decongests and disinfects without sting or burn. When used in the handy polythene squeeze bottle, "Ready-Spray", ARGOTONE can be carried in pocket or handbag to clear congestion whenever it's needed.

ARGOTONE "READY-SPRAY"

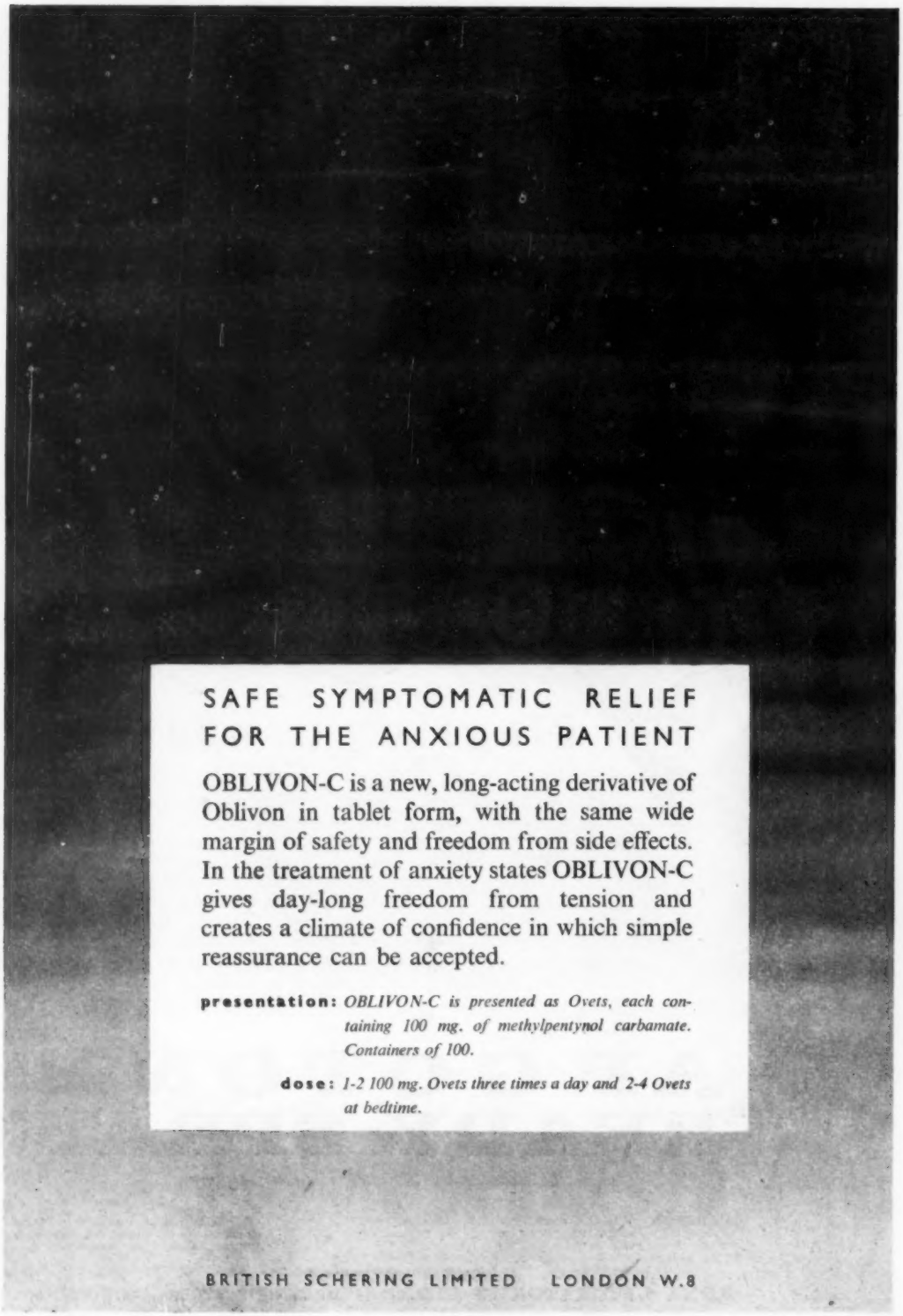
the nasal spray that keeps catarrh at bay

ARGOTONE "READY-SPRAY"
Basic N.H.S. price 2s. 10d. containing 15 cc. Prescribable on Form E.C.10.

ARGOTONE is also available as Nasal Drops in 20 cc. bottle complete with dropper and in 4 oz. dispensing pack.

Literature and sample gladly on request

RONA LABORATORIES LTD. 12-13 MOLYNEUX STREET, LONDON, W.1


SAFE SYMPTOMATIC RELIEF
FOR THE ANXIOUS PATIENT
OBLIVON-C is a new, long-acting derivative of Oblivon in tablet form, with the same wide margin of safety and freedom from side effects. In the treatment of anxiety states OBLIVON-C gives day-long freedom from tension and creates a climate of confidence in which simple reassurance can be accepted.
presentation: OBLIVON-C is presented as Ovets, each containing 100 mg. of methylpentynol carbamate. Containers of 100.
dose: 1-2 100 mg. Ovets three times a day and 2-4 Ovets at bedtime.
BRITISH SCHERING LIMITED LONDON W.8

The most suitable iron

FERROMYN *(Ferrous Succinate)* has been proved clinically to offer a most acceptable form of iron for oral administration in the treatment of hypochromic anæmias.

RECENT FINDINGS

In a clinical trial* conducted this year a therapeutic comparison was made between Oral (*Ferromyn*), Intramuscular and Intravenous methods of iron administration. **"... and unless the patient is very near term this *(Ferromyn)* is the method of choice in the first instance, even for severe degrees of iron-deficiency anæmia."**

* *British Medical Journal (1956)*, **2**, *638*

FERROMYN *is presented in four forms:*

FERROMYN TABLETS & FERROMYN ELIXIR Each tablet/teaspoonful contains: *Ferrous Succinate 150 mg.*

FERROMYN 'B' TABLETS & ELIXIR FERROMYN 'B' Each tablet/teaspoonful contains: *Ferrous Succinate 150 mg. Aneurine Hydrochloride 1 mg. Riboflavin 1 mg. Nicotinamide 10 mg.*

FERROMYN

LEADERSHIP IN ORAL IRON THERAPY

CALMIC LIMITED, CREWE. *Phone CREWE 3251-5* **LONDON:** *2 Mansfield St., W.1. Phone LANgham 8038-9*

AUSTRALIA: 458-468 Wattle Street, Ultimo, Sydney, N.S.W. **CANADA:** Terminal Building York St., Toronto.

F4/1

The esters of NICOTINIC, SALICYLIC and p-AMINOBENZOIC acids bring relief to cases of arthritis and rheumatism

"Thank you, doctor"

IN CASES OF soft-tissue rheumatism, and arthritic disorders, many doctors are tending more and more to regard Transvasin as an indispensable adjuvant to treatment.

For Transvasin is composed of the esters of nicotinic, salicylic and p-aminobenzoic acids. These esters readily pass the skin barrier in therapeutic quantities, and so enable an effective concentration of drugs to be built up where they are needed.*

Transvasin not only induces vasodilation of the skin with a superficial erythema, but also brings about a deep hyperaemia of the underlying tissues. It is non-irritant and can be safely used on delicate skins.

It is now being widely prescribed, with successful clinical results. Since a very small quantity is sufficient for each application, the cost of treatment is extremely low.

**Therapeutische Umschau VIII, 1952, 13, 143.*

Salicylic acid tetrahydrofurfuryl-ester...	14%
Nicotinic acid ethyl-ester.....	2%
Nicotinic acid n-hexyl-ester.....	2%
p-Aminobenzoic acid ethyl-ester.....	2%
Water-miscible cream base ad	100%

Transvasin is available in 1 oz. tubes, basic N.H.S. price 2/6 plus P.T., and is not advertised to the public. Samples and literature will be glady sent on application.

LLOYD-HAMOL LTD

11 Waterloo Place, London, S.W.1. Tel. WHItehall 8654/5/6

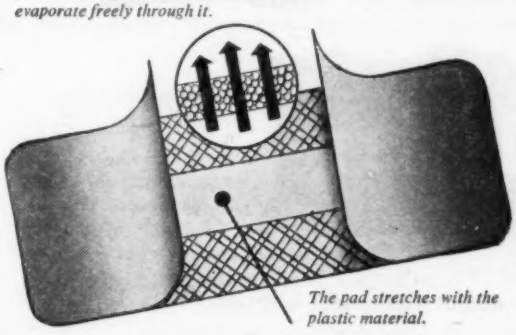
Transvasin is the registered trade mark of Lloyd-Hamol Ltd.

Elastoplast

Airstrip

a waterproof, yet non-occlusive, adhesive first aid dressing that prevents maceration

The plastic material consists of a micro-porous extensible filter, air-permeable yet waterproof. Sweat and skin exudates evaporate freely through it.



The pad stretches with the plastic material.

Elastoplast 'Airstrip' is a new type of first aid dressing. It is made from a specially developed plastic material, through which sweat and skin exudates evaporate at the same rate as they develop on the skin. The material is, in fact, a micro-porous extensible filter, and is not perforated. It provides a barrier to water, grease, oil and infective organisms.

Even after long application, Elastoplast 'Airstrip' does not cause the underlying skin to macerate. The adhesive is specially spread in a lattice pattern so that micro-porosity is retained and firm adhesion not impaired. The surface of the wound and the surrounding skin remain dry beneath an 'Airstrip' dressing, which can be left on until the wound heals.

Full details on application to :—

SMITH & NEPHEW LIMITED

WELWYN GARDEN CITY · HERTS

1856 S&N 1956

PROFESSIONAL PACK

available in cartons of:—

100 dressings 1½"x ⅞" **9/8d.**

„ „ 2½"x ⅞" **13/4d.**

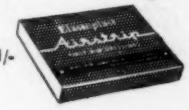
50 dressings 1½"x 1½" **7/-d.**

„ „ 2½"x 1½" **10/3d.**

Less the usual professional discount.

PUBLIC PACK

sold by all chemists at **1/-** and **2/-** each.



cremalgin

Methyl Nicotinate 1.0%
Glycol Salicylate 10.0%
Histamine Dihydrochloride 0.1%
Capsicin 0.1%
Excipient q.s.

Cremalgin has always meant Economy without detriment to the treatment of N.H.S. patients.

Indications: Rheumatism, Fibrositis, Sciatica, Lumbago, Muscular Pain, and associated conditions.

Packed in 1 oz. dispensing tubes at 21/- per doz. plus 30% p.t. and in 16 oz. dispensing jars at 19/6d. per unit plus 30% p.t.

WEST PHARMACEUTICAL CO. LTD. WOOD LANE W.12. Tel: SHE 6262

IN THE MENOPAUSE

One bottle of 60 TACE capsules (2 capsules a day) can relieve many of your menopausal patients.
Some may require a second course, but few will need a third.

Merrell research

The introduction of TACE marks the beginning of a new era in the treatment of menopausal symptoms. TACE is stored in the body fat and subsequently released in a manner resembling normal hormone secretion. There is virtually no withdrawal bleeding (in four investigations [1, 2, 3, 4] there were only 7 cases of withdrawal bleeding in 257 patients) and TACE is also extremely well tolerated in other respects.

Because of fat storage the action of TACE is prolonged. In 13 out of 16 patients beneficial effects remained up to 4 months after therapy had been discontinued.[1]

TACE is indicated in other cases which require œstrogen therapy—for example in the inhibition of lactation and the treatment of prostatic carcinoma.

TACE

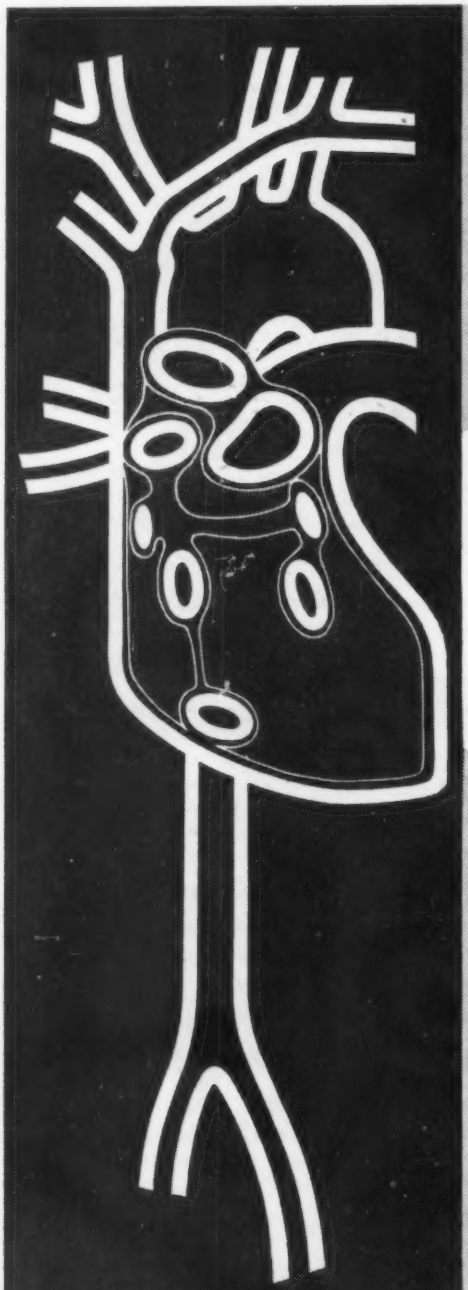
is available in green capsules (each containing 12 mg. chlorotrianisene dissolved in oil) in bottles of 60 and 300.

1. *Wis. med. J.* (1954) **53**:322.
2. *Amer. J. Obstet. Gynec.* (1954) **2**:201.
3. *J. Indiana med. Ass.* (1954) **47**:869.
4. *J. Clin. Endocr.* (1954) **14**:272.

Distributed in the United Kingdom and the Republic of Ireland by

RIKER LABORATORIES LIMITED, LOUGHBOROUGH, LEICS.

for the Wm. S. Merrell Company, London.



Geigy

Sinthrome

REGD. TRADE MARK

A new oral anticoagulant for the prophylaxis and treatment of thrombo-embolic disorders

RAPID IN ACTION

PREDICTABLE IN EFFECT

EASILY CONTROLLED

NON-CUMULATIVE

EFFECTIVE IN SMALL DOSES

ONCE DAILY ADMINISTRATION

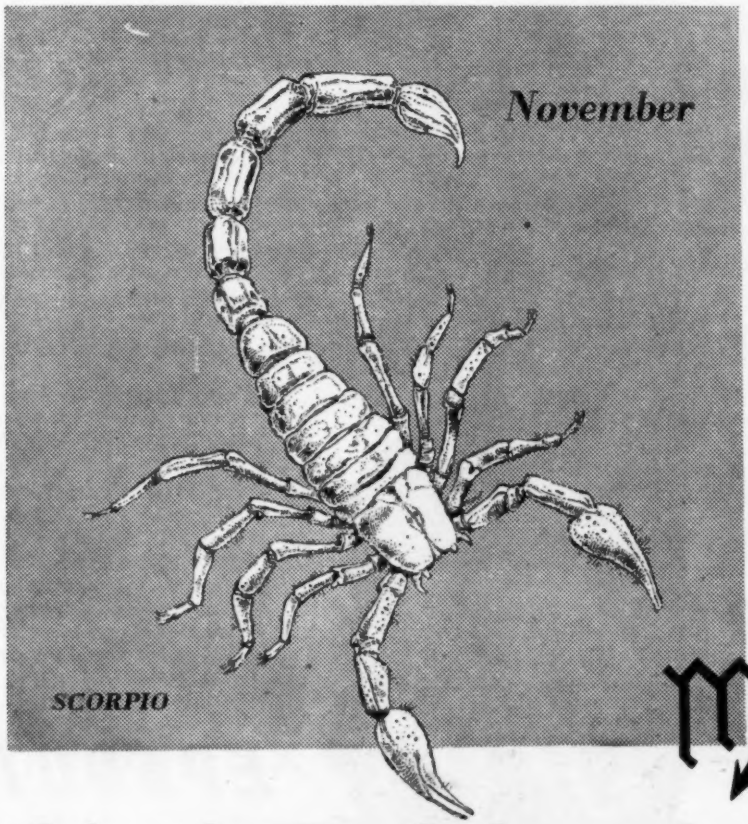
WELL TOLERATED

Geigy

Detailed literature is available on request

GEIGY PHARMACEUTICAL COMPANY LTD

Wythenshawe, MANCHESTER, 23



at this time of the year . . .

The increase in upper respiratory tract infection
calls for the discriminating use of
a safe and efficient nasal decongestant

IN A WORD . . . **Fenox** *NASAL DROPS*

Isotonic Nasal Drops
of Phenylephrine and Naphazoline.
Basic N.H.S. price 1/8 per ½ fl. oz. dropper bottle

BOOTS PURE DRUG COMPANY LIMITED · NOTTINGHAM · ENGLAND

Boots

to live in freedom . . .

Treatment with EPANUTIN gives four out of five epileptics the freedom to live a normal life. It enables them to work as others do and to enjoy pleasures normally beyond their reach. It prevents or greatly decreases the severity of the patient's seizures with minimal hypnotic or narcotic effects. In cases where an added sedative effect is necessary EPANUTIN & PHENOBARBITONE is an effective combination.

Epanutin & Phenobarbitone capsules containing 0.1 g. (1½ grains) Epanutin (phenytoin sodium) with 0.05 g. (¾ grain) phenobarbitone may also be usefully employed in the transition from phenobarbitone to Epanutin.

EPANUTIN

● Epanutin Capsules (1½ grs.) and Epanutin with Phenobarbitone Capsules are obtainable in bottles of 100 and 1,000.

PARKE, DAVIS & Company, Limited *(Inc. U.S.A.)*, Hounslow, Middlesex. **Tel.: Hounslow 2361**

The
ELECTRIC BLANKET in the TUBE

FINALGON Regd. Trade Mark
OINTMENT

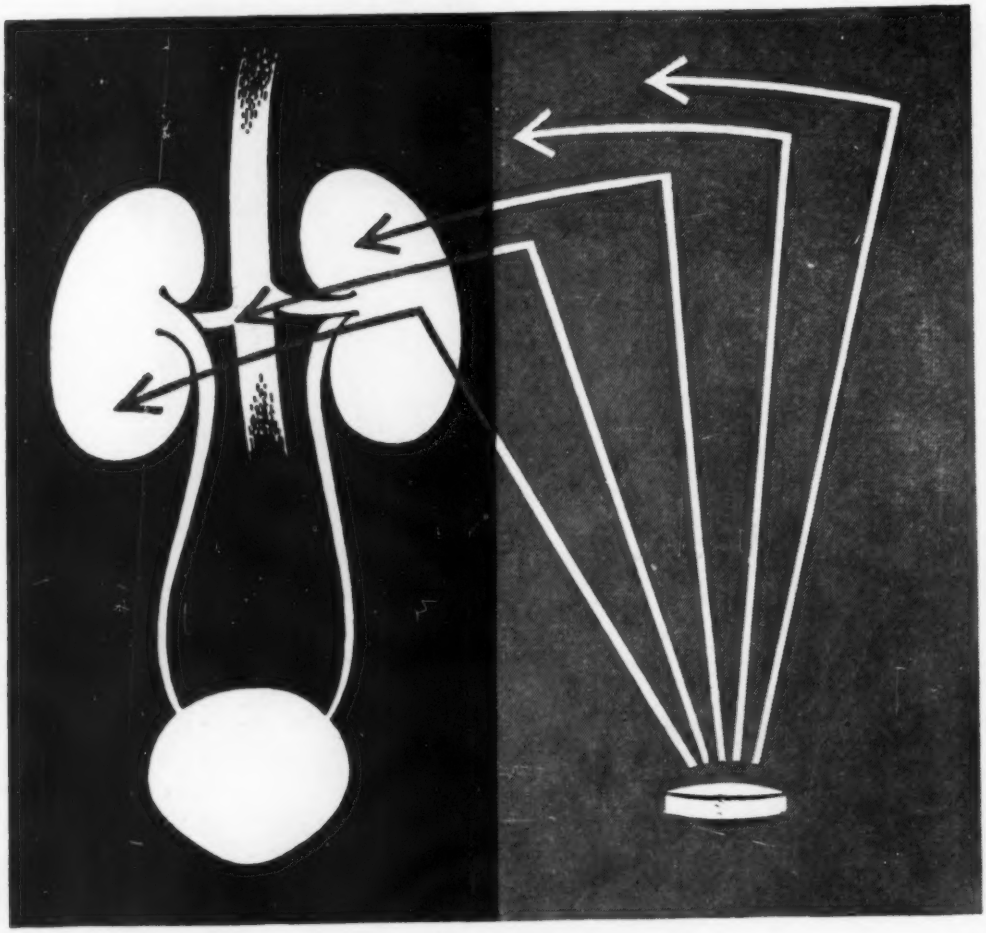
Produces a glowing feeling of warmth
which lasts for hours
and relieves rheumatic pain

Tube of 20 g.

COMPOSITION :
Nonylic acid vanillylamide 0.4% and
Nicotinic acid-β-butoxyethyl ester
2.5% in a suitable ointment base.
5073/E

LEWIS LABORATORIES LTD., LEEDS 9

19



Quickly into action

The high solubility and low acetylation of Urolucosil mean that it is rapidly excreted into the urinary tract without risk of crystalluria. As a result, high urine concentrations can be quickly attained.

That is why Urolucosil is so effective against B. coli infections of the urinary tract. Small doses are highly effective, and side-effects are rare. The maintenance dose of Urolucosil can be continued for many months without risk of toxic reactions.

Active Principle :
Sulphamethizole 0.1G.

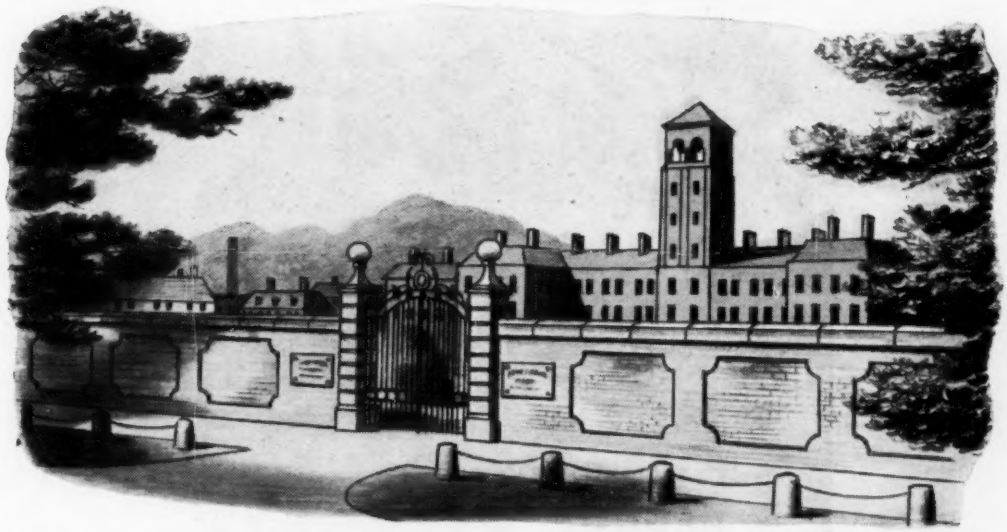
Dose :
1 tablet 4-hourly.

Packing :
In bottles of 25, 250 and 1,000 tablets.

WARNER

UROLUCOSIL
TRADE MARK

WILLIAM R. WARNER & CO. LTD., POWER ROAD, LONDON, W.4.



MILTOWN*

*TRADE MARK

MEPROBAMATE

promises much in mental illness

The virtues of MILTOWN as a powerful yet safe tranquillizer in the psychoneuroses are already widely recognised. Preliminary experience with the drug in psychotic patients now indicates that it may play an important part in the treatment of mental disease. In a dosage higher than that used for the psychoneuroses, MILTOWN may benefit delusional, assaultive, noisy and hallucinated patients, restoring well-being, calmness and serenity. Some manic-depressives and hypomaniacs have also been favourably affected by the drug.

MILTOWN has been used successfully as a premedication in E.C.T. and as a valuable aid in psychotherapy. It has not been reported to elicit suicidal tendencies. The low incidence of side effects and a low toxicity are notable features in therapy with MILTOWN. The drug has been given over long periods to psychotic patients without ill effects.

MILTOWN *is the one tranquillizer that relaxes both mind and body*

MILTOWN Meprobamate is 2-methyl-2-n-propyl-1, 3-propanediol dicarbamate.

Bottles of 50 and 500. 400 mg. tablets

LEDERLE LABORATORIES DIVISION

Cyanamid PRODUCTS LTD. **LONDON, W.C.2**

SAFE

PLEASANT

RAPID

ANALGESIA

FOR ALL PAIN *that responds to aspirin; for all palates, and for all patients—even the dyspeptic*—PAYNOCIL *is universally acceptable.*

FOR CHILDREN *there is no pleasanter way of taking aspirin, and coaxing is seldom necessary.* JUNIOR PAYNOCIL *tablets contain just the right dose.*

NON-IRRITANT—the aspirin particles are minutely and evenly spread over the gastric mucosa in a harmless and non-adherent form.

ACCEPTABLE—the flavour of Paynocil is remarkably pleasant and the presence of aspirin is unnoticed.

QUICK DISPERSING—the disintegration of Paynocil tablets on the tongue—without water—has been called "flash dispersal". Chewing is unnecessary and swallowing effortless.

PAYNOCIL

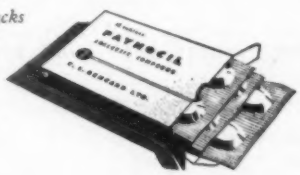
EACH TABLET CONTAINS

Acetylsalicylic acid ..... 10 grains

Aminoacetic acid ..... 5 grains

PACKAGES in sealed foil strips:
Cartons of 18.

Dispensing packs of 240 : basic N.H.S. cost (tax free) 21/8d.



Junior PAYNOCIL

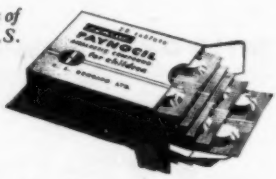
EACH TABLET CONTAINS

Acetylsalicylic acid ..... 2½ grains

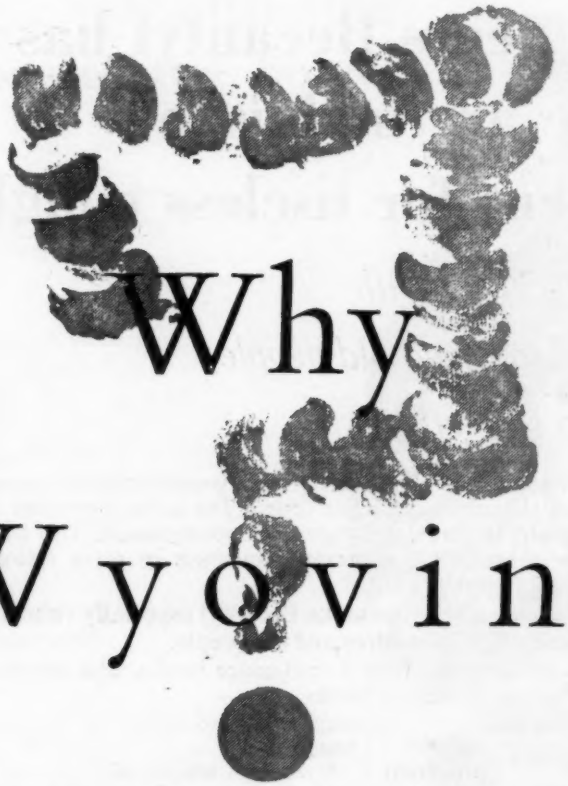
Aminoacetic acid ..... 1½ grains

PACKAGES in sealed foil strips:
Cartons of 20.

Dispensing packs of 240 : basic N.H.S. cost (tax free) 15/-.



C. L. BENCARD LTD. PARK ROYAL, LONDON, N.W.10



Wyovin is an improved and safe antispasmodic—dicyclomine hydrochloride. Its parasympathetic depressant action is similar to atropine, but it has the marked advantage that undesirable side-effects such as dryness of the mouth and blurred vision are absent.

Wyovin is especially suitable for producing swift symptomatic relief in any complaint where plain muscle is in a state of spasm or is hypermotile. It is, therefore, a valuable, well tolerated adjuvant to 'antacid' treatment in the treatment of peptic ulceration.

PACKS:

Tablets of 10 mg. Alternatively, tablets of dicyclomine hydrochloride with the addition of 15 mg. phenobarbitone (approx. ¼ grain).

Bottles of 50 or dispensing pack of 250 tablets.

Wyeth

The word 'Wyovin' is a registered trade mark of

JOHN WYETH AND BROTHER LIMITED

CLIFTON HOUSE, EUSTON ROAD, LONDON, N.W.I Wy.1.

In two years Becantyl has become an established treatment for useless cough–

Especially with

children and old people,

No side-effects

Unrelated to morphine derivatives or guaiacol and with none of their disadvantages, Becantyl suppresses useless cough. The active ingredient in Becantyl is Sodium-2 : 6-ditertiarybutylnaphthalene monosulphonate. This chemical, which does not cause constipation, anorexia, drowsiness or other side-effects, is the result of original research.

These characteristics make Becantyl especially valuable for the treatment of useless cough in children and old people.

Becantyl is available in 4 fluid-ounce bottles, and also in 40 fluid-ounce and 80 fluid-ounce dispensing bottles.

The suggested doses are:—

Adults: 2 teaspoonfuls

Children: 3—6 years: ½ teaspoonful

7—15 years: ½—1 teaspoonful

three times a day or as prescribed.

Becantyl has no B.P. or N.F. equivalent, is not advertised to the public, and may be prescribed on form E.C.10.

BECANTYL

Literature and Samples available from the Medical Information Department

Horlicks Limited, Pharmaceutical Division, Slough, Bucks

BIBLIOGRAPHY

B.M.J.—1956—Vol. **1**—P.1486

Etude comparative de l'action antitussigène des différents dérivés opiacés et synthétiques par rapport à celle du phosphate de codeine. *Therapie*, 1954, **9**, 737

Contribution a l'étude pharmacologique et toxicologique du butylnaphtalène sulfonate sodique ou L.1633. *Arch. Internat. Pharmacodyn*, 1954, **97**, 34

D'un nouveau sédatif de la toux—*Thèse de doctorat, Paris*, June, 1952

Bécantex in der Behandlung des Hustens bei Tbc-Patienten. *Praxis*, 1953, **42**, 974

La Toux et son traitement symptomatique. *Semaine des Hôpitaux*, 1953, No. 60. 2999

Arch.f.exp. Pathol. u. Pharmakol, 1940, **194**, 621

Proc. Soc. Exp. Biol. & Med., 1952, **81**, 463

A Propos des Sédatifs de la Toux. *Revue du Praticien*, 1954, No. 7

Physiologic rehabilitation of the constipated bowel

1. Absorption of senna glycosides into blood stream with no effect upon stomach and small intestine

2. Excretion into large bowel—conversion into active principles

3. Activation of large bowel peristalsis via myenteric nerve plexus (Auerbach's)

Neuro-muscular stimulation of the defaecation mechanism with restoration of natural rhythm

SENOKOT (the first standardised preparation of senna containing the total active constituents of the pod) is not a laxative in the usual sense. It restores large bowel sensitivity and reflex evacuation, and the general trend of therapy in the treatment of chronic constipation is the regular *administration of the dose required to give a comfortable motion. As natural rhythm is established, dosage is gradually reduced and finally discontinued.*

Brit. Ency. Med. Pract., Cum. Suppl. 1955 p. 79; Lancet, 1952, **1**, 655; ibid 1953, **1**, 497 and 602; Med. Press, 1954, **231**, 521; ibid 1954, **232**, 127; Pharm. J. 1951, **167**, 115; Practitioner 1953, **170**, 206.

GRANULES: 2 oz., 6 oz. and 2 lb.
TABLETS: 50, 200 and 1,000.
Prescribed under the N.H.S.:
J.C.P. Category 3; inexpensive;
not advertised to the public.

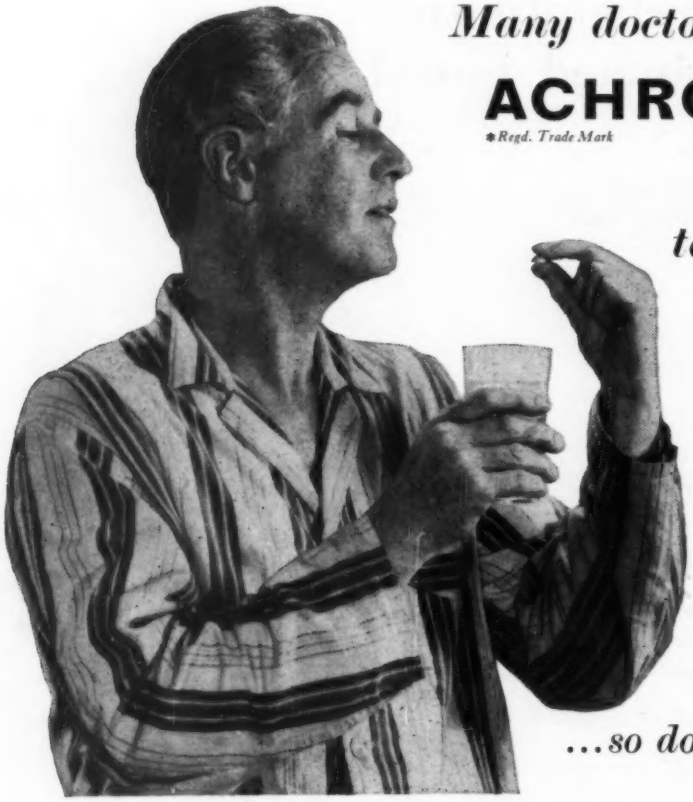
℞ Senokot

STABLE STANDARDISED SENNA

Granules: 1 - 2 teaspoonfuls. Tablets: 2 - 4.

Brit. Pat. No. 683,990

WESTMINSTER LABORATORIES LTD., CHALCOT ROAD, LONDON, N.W.1



Many doctors prefer

ACHROMYCIN*

* *Regd. Trade Mark* Tetracycline

in

tablet form...

...so do many patients

ACHROMYCIN tetracycline is now established as the foremost broad-spectrum antibiotic of the day. Among the 14 prescription forms of ACHROMYCIN now available, ACHROMYCIN Tablets are especially favoured by practitioners. The odourless thin coating of the Tablets quickly dissolves, permitting ready absorption of the antibiotic and diffusion into body fluids and tissues. Patients find the Tablets are easy to swallow and a particularly convenient form of the antibiotic. Like all other prescription forms of ACHROMYCIN, the Tablets ensure broad-spectrum activity, prompt control of infection with negligible side effects.

50 mg. Tablets—vials of 25 and 100. 250 mg. Tablets—vials of 16, bottles of 100 and 1,000

and for specialized needs...

ACHROMYCIN Liquid Pediatric Drops—Palatable cherry-flavoured preparation for administration in milk, water or fruit juice. *1 Gm. in 10 cc. bottle.*

ACHROMYCIN Syrup—Cherry-flavoured syrup, especially suitable for the young. Potency: 125 mg. per teaspoonful (5 cc.). *In bottles of 2 and 16 fl. oz.*

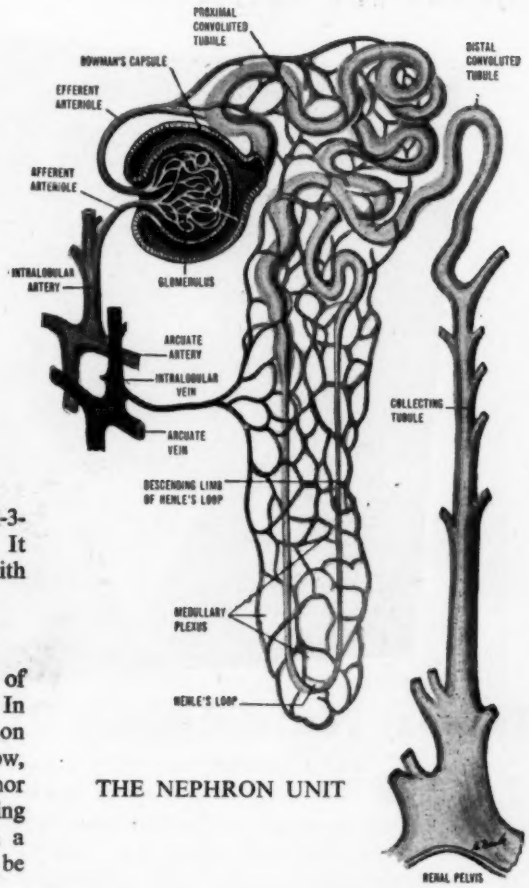
ACHROMYCIN Intramuscular—Widely used to initiate antibiotic therapy. Effective levels are then maintained by oral administration. *In vials of 100 mg.*

LEDERLE LABORATORIES DIVISION
Cyanamid PRODUCTS LTD. **LONDON, W.C.2**

A PRODUCT OF SEARLE RESEARCH

MICTINE*

Effective, Non-Mercurial Oral Diuretic



THE NEPHRON UNIT

STRUCTURE

"Mictine," brand of aminometradine, is 1-allyl-3-ethyl-6-aminotetrahydropyrimidinedione. It avoids the undesirable side-effects associated with mercurial, xanthine or sulphonamide agents.

ACTION AND EFFECTIVENESS

"Mictine" is believed to act by inhibition of sodium ion absorption in the renal tubule. In therapeutic dosage it has not caused any effect on glomerular filtration rate, renal plasma flow, cardiac output, heart rate or blood pressure, nor any alteration in the blood or blood-forming tissues or in renal or hepatic function. In a group of unselected patients 70 per cent. may be expected to respond to "Mictine".

TOLERANCE

"Mictine" is not toxic at therapeutic dosages. On the other hand, side-effects do occur such as headache and gastro-intestinal symptoms. These are reduced to a minimum if an interrupted dosage scheme is adopted.

ADMINISTRATION

"Mictine" is indicated in the maintenance of an oedema-free state in any patient requiring diuretic therapy and the effecting of initial diuresis in all patients but those with severe congestive failure. For these purposes the dosage is one to four tablets daily in divided doses *during meals* on alternate days or on three successive days followed by four days without therapy. "Mictine" is not intended to produce initial diuresis in more severe congestive failure; however, "Mictine" may be given when other diuretics are contra-indicated, or if tolerance to them has developed.

Available in bottles of 25, 100 and 500 tablets each containing 200 mg. aminometradine.

Full literature is available to the medical profession on request. G. D. Searle & Co. Ltd., High Wycombe, Bucks. Tel. High Wycombe 1770.

**Registered Trade Mark*

SEARLE

MI : P86

MA3887

✻ The NEW antibiotic

for oral administration

'ROVAMYCIN'

✻ IS ACTIVE BY MOUTH ✻ IS REMARKABLY WELL TOLERATED

✻ DOES NOT INTERFERE WITH THE NORMAL INTESTINAL FLORA—UNLIKELY TO RESULT IN THE DEVELOPMENT OF *CANDIDA* INFECTIONS OR STAPHYLOCOCCAL ENTERITIS.

Because of these properties 'Rovamycin' is suitable for the treatment of the commoner infections, especially those of the lung, upper respiratory tract and middle ear. It is indicated also in the treatment of patients who are sensitized to penicillin or whose infections are due to staphylococci resistant to other antibiotics, and in non-specific urethritis. 'Rovamycin' is supplied as varnished tablets of 250 mgm. spiramycin base.

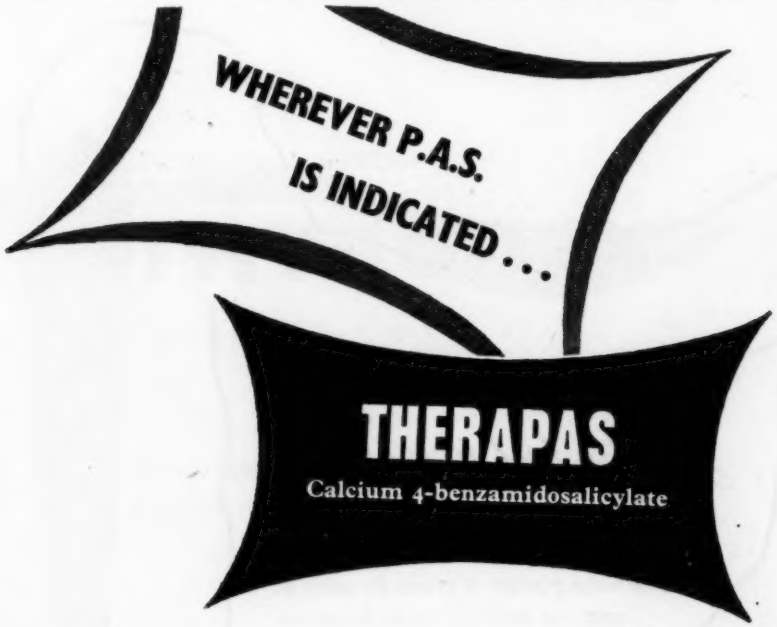
ILLUSTRATION: *Evaluation of antibiotic activity by measuring inhibitory zones on agar plates*

Further information is available on request

MANUFACTURED BY
MAY & BAKER LTD

An M&B brand Medical Product

DISTRIBUTORS · PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD · DAGENHAM · ESSEX



An accepted combination in the chemotherapy of tuberculosis is P.A.S. together with isoniazid or streptomycin. Either combination, according to a recent Medical Research Council report (1), is very effective and helps to delay the appearance of resistant strains. P.A.S. has, however, the disadvantage of being poorly tolerated; many patients would welcome an alternative. **Therapas,** first synthesized in our laboratories in 1951, was introduced as an alternative to P.A.S. to which it is converted in the body (2). It has now been shown that it not only delays the emergence of strains resistant to isoniazid or streptomycin, when used together with either of these drugs, but has a therapeutic action *per se*. It gives satisfactory clinical and radiological results in the treatment of pulmonary tuberculosis (3, 4) and of genito-urinary tuberculosis(5). Since it has a sweet, not unpleasant, taste it is usually much preferred by the patient.

1 Report to M.R.C. of Tuberculosis Chemotherapy Trials Committee, *Brit. Med. J.*, 1955, 1, 435.

2 *J. Pharmacy & Pharmacol.*, 1953, 5, 849.

3 *Schweiz. med. Wschr.* 1955, 85, 222.

4 *Tubercle* 1955, 36, 209.

5 *Lancet*, 1955, 1, 116.

dosage

Therapas may be administered in daily doses of 14 G:

availability

Individual packets of 3.5 G. in boxes of 100 packets.
1 G. cachets in containers of 100 and 500.
Bulk Therapas powder in containers of 100 G. and 500 G.

S&N

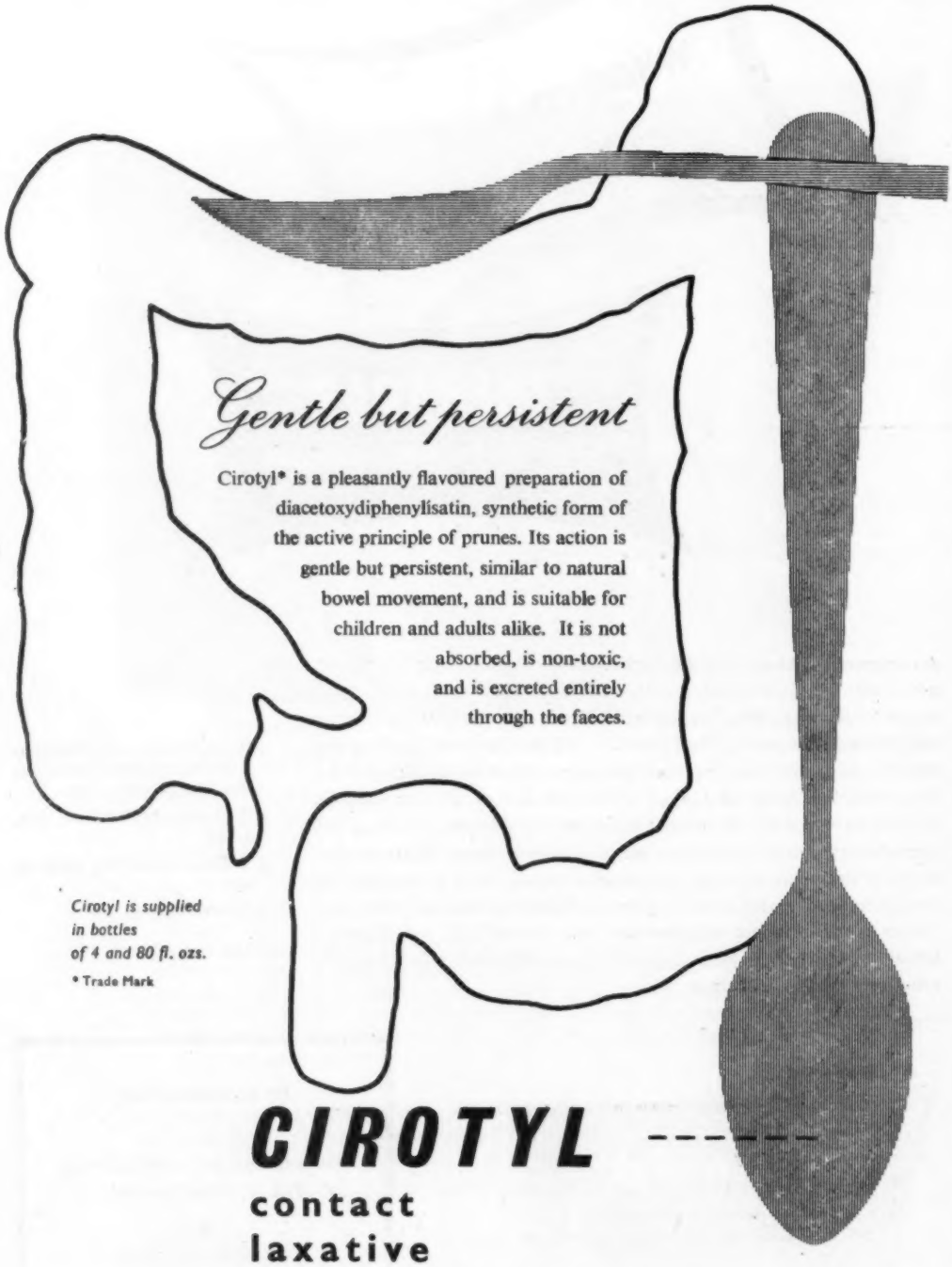
Further information and prices from
Smith & Nephew Ltd.,
Welwyn Garden City, Herts.

to summarize

a
THERAPAS is just as effective as P.A.S., if not more so.

b
It is better tolerated.

c
And it can be used wherever P.A.S. is indicated.



Gentle but persistent

Cirotyl* is a pleasantly flavoured preparation of diacetoxydiphenylisatin, synthetic form of the active principle of prunes. Its action is gentle but persistent, similar to natural bowel movement, and is suitable for children and adults alike. It is not absorbed, is non-toxic, and is excreted entirely through the faeces.

Cirotyl is supplied in bottles of 4 and 80 fl. ozs.

* Trade Mark

CIROTYL

contact laxative preparation

PARKE, DAVIS & COMPANY LTD. *(Inc. U.S.A.)* HOUNSLOW • MIDDLESEX • TEL: HOUnslow 2361 720

A well-proved formula

THYRODEX

TABLETS

Excess weight puts a brake on physical activity

Thyrodex tablets contain dexamphetamine sulphate to depress the appetite and thyroid substance to reduce fat stores.

Literature and samples on request.

PAINES & BYRNE LTD., Pabyrn Laboratories, Greenford, England.

NOW POSSIBLE!

INCREASED SAFETY

AND EFFICIENCY WITH

HYDROMYCIN

IN THE TREATMENT OF INFLAMMATORY SKIN CONDITIONS

HYDROMYCIN by combining the anti-inflammatory properties of Hydrocortisone with the anti-bacterial properties of Neomycin offers increased safety over the use of Hydrocortisone alone. HYDROMYCIN is ideal in the treatment of contact dermatitis, atopic dermatitis and non-specific pruritus.

SKIN OINTMENT *Tubes of 5G and 15G*

EAR/EYE OINTMENT *Tubes of 3G*

THE FULL BOOTS BRITISH-MADE CORTICOSTEROID RANGE

CORTISTAB (Cortisone Acetate) Tablets, Injection, Eye Drops, Eye Ointment.
HYDROCORTISTAB (Hydrocortisone) Tablets, Local & Intravenous Injections, Skin Ointment, Eye Ointment, Eye Drops.
DELTA-STAB (Prednisolone) Tablets.
Delta-stab Tablets are at present available through N.H.S. hospitals only by arrangement with the Ministry of Health.

BOOTS PURE DRUG COMPANY LIMITED, NOTTINGHAM

Literature and further information obtainable from :

Boots

ADRENOXYL

Reduces the mean bleeding-time

Adrenoxyl reduces the mean bleeding-time by decreasing the permeability and increasing the contractility and resistance of the capillary wall.

A dry field at operation

Adrenoxyl has been successful in diminishing capillary bleeding in a wide range of surgical operations. It has proved particularly useful in ear, nose and throat, ophthalmic and plastic surgery. In plastic surgery of the face it has been reported that, post-operatively, there is less swelling and bruising when Adrenoxyl has been used.

No side effects

Adrenoxyl does not have any side effects or contraindications. It does not affect blood coagulation, blood pressure or pulse rate and does not possess any sympathomimetic properties.

In medical conditions

Adrenoxyl has been used with success in those medical conditions associated with capillary fragility.

In the British Medical Journal (April 21st, 1956) a correspondent confirmed the value of Adrenoxyl in providing a dry field for the surgeon and in shortening the duration of the operation.

Packs

Ampoules: Boxes of 6 and boxes of 50.
Each ampoule contains 0.75 mg. of adrenochrome monosemicarbazone dihydrate.

Tablets: Tubes of 25 and bottles of 500.
Each tablet contains 2.5 mg. of adrenochrome monosemicarbazone dihydrate.

The best results are obtained when both tablets and ampoules are used.

HORLICKS LIMITED

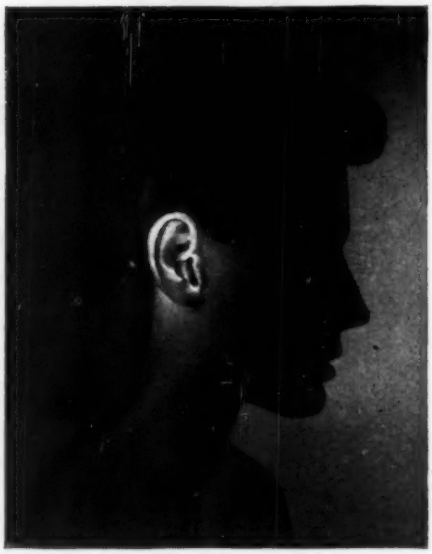
Pharmaceutical Division Slough Bucks

Literature and samples are available on request to the Medical Information Dept.

33

EAR WAX

Removed this easy way



The removal of wax from the external auditory meatus has, in the past, normally entailed attendance by the patient for diagnosis and for the prescription of a suitable loosening agent, and a second attendance a few days later for syringing. Now, by the use of Cerumol Ear Drops, wax can be removed in most cases at one visit. A few drops of Cerumol can be instilled into the ear and, while another patient is being attended to, the soft cerumen dissolves and the harder wax disimpacts. The wax can then be removed by gentle syringing or with cotton wool. The wax may even be found to run out of the ear on its own accord, in which case patients themselves may instil Cerumol at home, obviating further attendances. Cerumol is anti-bacterial, non-irritating and harmless to the lining of the external auditory meatus or the tympanic membrane. Cerumol is included in Category No. 4 of the M.O.H. classified list and may be prescribed on N.H.S. Form E.C.10.

CERUMOL
Regd TRADE MARK

EAR DROPS

for the easier removal of wax

Distributors in U.K.
TAMPAX LIMITED, BELVUE ROAD, NORTHOLT, GREENFORD, MIDDLESEX. Telephone : WAXlow 2244

If you wish to test for yourself and have not received recently a 10 c.c. vial please write or telephone direct to :

LABORATORIES FOR APPLIED BIOLOGY LIMITED,
91, AMHURST PARK, LONDON, N.16 Telephone STAmford Hill 2252

PACKS for Surgery Use : 10 c.c. vial — separate dropper included. (Basic N.H.S. price 2/8.) For Hospital Use : 2 oz. and 10 oz. bottles.

pleasant-tasting

Paladac

liquid vitamin supplement

Children take Paladac without fuss or bother because it "tastes good".

Mothers like to give it because Paladac is readily accepted, flows freely, needs no refrigeration, and may be added to milk, fruit juice and other foods, or taken direct from a teaspoon.

Doctors can prescribe Paladac with confidence since it provides a reliable daily source of vitamins—one 4 c.c. teaspoonful supplies 7 vitamins in amounts exceeding minimum daily vitamin requirements.

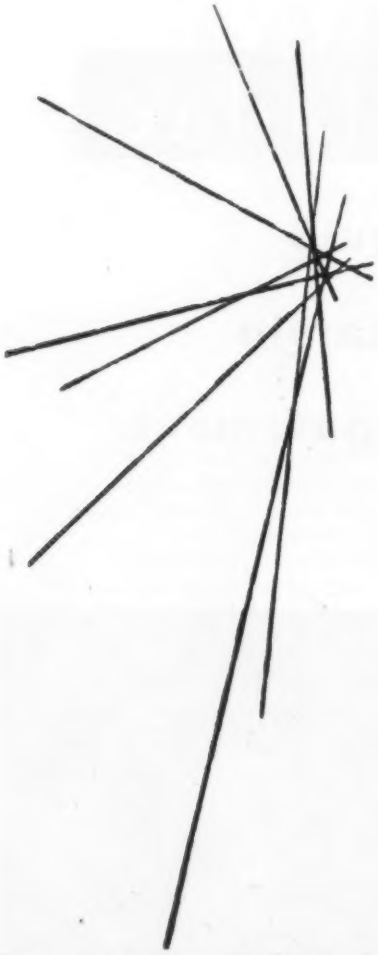
Primarily intended for the 3-10 age-group, Paladac is equally suitable for adolescents and adults where liquid medication may be preferred.

Paladac is supplied in bottles of 4 and 16 fl. ozs.

Each teaspoonful (4 c.c.) contains:— Vitamin A 5,000 units, Vitamin D 1,000 units, Vitamin B_1 (Aneurine Hydrochloride) 3 mg., Vitamin B_2 (Riboflavin) 3 mg., Vitamin B_6 (Pyridoxine Hydrochloride) 1 mg., Nicotinamide 20 mg., Vitamin C (Ascorbic Acid) 50 mg.

Parke, Davis & COMPANY, LTD. *(Inc. U.S.A.) Hounslow, Middlesex. Tel: Hounslow 2361*

700



Migraine

and other headaches of vascular origin

are aborted in 80 per cent of cases by ORAL TREATMENT with

CAFERGOT

sugar-coated tablets

Ergotamine Tartrate B.P.	1 mg.
Caffeine B.P.	100 mg.

Patients who experience nausea and vomiting early in the attack or who are unable to tolerate oral treatment, usually benefit from treatment with

CAFERGOT SUPPOSITORIES

Ergotamine Tartrate B.P.	2 mg.
Caffeine B.P.	100 mg.
Isobutyl allylbarbituric acid	100 mg.
Total laevorotatory alkaloids of belladonna	0.25 mg.

Literature and samples available on request

SANDOZ

SANDOZ PRODUCTS LIMITED

134, *Wigmore Street* *London, W.*1.

NEW FORMULATION

Pollergen REGD.

MIXED GRASS POLLENS EXTRACT

replacing

Pollergen MIXED GRASS AND TREE POLLENS EXTRACT

From 12th November, "Duncan" extracts for prick tests and hyposensitization with grass pollens in the diagnosis and treatment of hay fever and seasonal asthma, will be issued as shown below, and the preparation previously available as "Pollergen" will be withdrawn. Please note the details of the new "Pollergen".

FOR PRICK TESTS: Pack of 2 ml. bottle containing 20,000 Noon units/ml. and 2 ml. bottle of solution for control tests.

FOR HYPOSENSITIZATION: Set of two 5 ml. and two 10 ml. bottles containing respectively 100, 500, 2,500 and 25,000 Noon units/ml. for course of hyposensitization injections.

In recent years, advances have been made in the study of grass pollens and hay fever and seasonal asthma. The new "Pollergen" resulted from these advances. Literature concerning it will be sent on request, and inconvenience will be avoided if physicians who used the old "Pollergen" will kindly make sure that they receive the literature on the new preparation.

DUNCAN, FLOCKHART & CO., LTD.

16, Wheatfield Road, **EDINBURGH, 11**

4, Carlos Place, **LONDON, W.1**

MIGRAINE

A suggested regime for treatment using **PARENTROVITE** and **RIBOVEL**

(RIBOFLAVINE B.P.)

Symptoms of migraine have been greatly relieved and attacks prevented or reduced in frequency by treatment with high doses of the vitamin B complex including riboflavine. The regime suggested is based on clinical experience and is supported by physiological considerations.

The characteristic headache is thought to be due to vaso-motor instability and dyscrasias often associated with migraine are regarded as evidence of the need for a higher intake of certain vitamins.

The most recent work suggests that high doses of the B complex given initially produce the best results, and that treatment can be continued with riboflavine alone.

SUGGESTED REGIME

INITIALLY

Injection of the contents of 1 pair of *Parentrovite maintenance* ampoules intramuscularly on alternate days up to 6 injections.

SIMULTANEOUSLY

One tablet of *Ribovel* 10 mg. three times daily and continued at this level for at least one month.

FOR MAINTENANCE

One tablet of *Ribovel* 10 mg. daily.

The effect of the vitamin B complex in promoting physical and psychological well-being should promote almost immediate subjective improvement. Relief of symptoms follow.

For full details of packs, prices, etc., please write to:—

VITAMINS LIMITED

(DEPT. B12), UPPER MALL, W.6.

REMEMBER POPPY DAY

Introducing
'ANTHIPHEN'

trade mark brand

DICHLOROPHEN

✻

FOR THE RAPID CONTROL OF HUMAN TAPEWORM INFESTATIONS

✻

★ **rapid and predictable control of infestations due to *T. saginata* and *Dipylidium canis***

★ **well tolerated, and effective when given as a single oral dose**

★ **neither prior starvation nor subsequent purgation is necessary**

★ **exerts a direct taeniacidal action causing disintegration of the parasite which is not passed in recognizable form.**

Detailed information is available on request.

PRESENTATIONS: 'Anthiphen' is issued in containers of 12 x 0·5 Gm. tablets

(Twelve tablets represent an average adult dose)

M&B

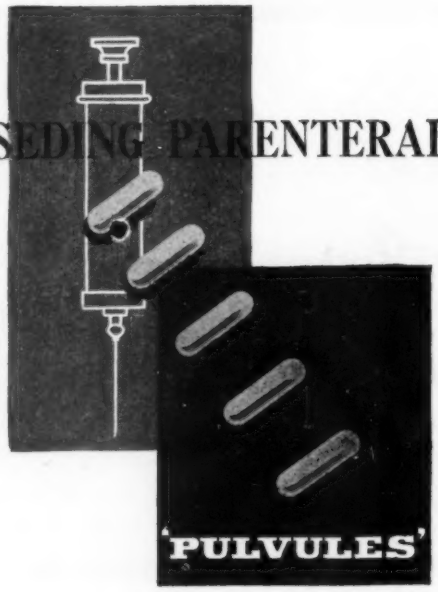
MANUFACTURED BY

MAY & BAKER LTD

DISTRIBUTORS:

PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD · DAGENHAM · ESSEX

An **M&B** *brand Medical Product* MA3871



SUPERSEDING PARENTERAL THERAPY

PENICILLIN-V Lilly

THE *effective* **ORAL PENICILLIN**

Reports prove that Penicillin-V will give clinical results comparable with parenteral penicillin, and is more potent dose for dose than other oral penicillins. Penicillin-V is unique in that it is unaffected by the action of gastric acid. Whenever penicillin is indicated, Penicillin-V is the product of choice.

The average dose is 125 mg. (200,000 units) four times daily, increased in severe infections.

'PULVULES' PENICILLIN-V, LILLY,

125 mg. (200,000 units)
250 mg. (400,000 units)

SUSPENSION PENICILLIN-V LILLY, Paediatric

In bottles to make 60 cc., containing 62.5 mg. (100,000 units) in each large teaspoonful.

TABLETS 'PEN-V-SULPHA'

125 mg. Penicillin-V with 0.5 Gm. Sulphonamides (Sulphadiazine, Sulphamerazine and Sulphadimidine).

Lilly TRADE MARK

ELI LILLY & COMPANY LIMITED

BASINGSTOKE HANTS

"One slumber finds another"

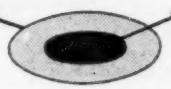
HERBERT Jacula Prudentum 1640

The two-phase action of Bidormal ensures steady sedation throughout the night.

As the effect of the short-acting barbiturate pentobarbitone, contained in the outer shell of Bidormal, begins to fade, the action of the butobarbitone, contained in the inner core, takes over smoothly ensuring calm, uninterrupted sleep for approximately eight hours.

The patient awakens refreshed without any trace of drowsiness, hangover or 'drugged' feeling.

BIDORMAL



OUTER SHELL
Pentobarbitone Sodium B.P. 90 mg.
FOR IMMEDIATE ACTION

INNER-CORE
Butobarbitone B.P.C. 60 mg.
FOR DELAYED ACTION

C50/419/H

ALLEN & HANBURYS LTD LONDON E 2
TELEPHONE: BISHOPSGATE 3201 (20 LINES). TELEGRAMS: "GREENBURYS, BETH, LONDON"

'S-MEZ'

Regd. Trade Mark

is short for 'Sulphamezathine'

(Sulphadimidine B.P.)

When prescribing, most doctors prefer short words. So to save your time, and because so much 'Sulphamezathine' is prescribed, we have registered the abbreviation 'S-MEZ'. You can now use this shortened version officially, knowing that 'Sulphamezathine' will be dispensed. 'Sulphamezathine'—or 'S-MEZ'; they both stand for sulphadimidine. But 'S-MEZ' is quicker to write, and actually cheaper to prescribe, than sulphadimidine.

IMPERIAL CHEMICAL (PHARMACEUTICALS) LTD., WILMSLOW, CHESHIRE

Ph.666

A subsidiary company of Imperial Chemical Industries Limited

ICI

Introducing 'migril' for

3D relief in migraine

Dispels headache
Disperses visual disturbances
Defeats nausea and vomiting

A new product—'Migril'—provides, for the first time, a successful 3-way attack on migraine.

'Migril' contains ergotamine tartrate (2 mgm.), caffeine (100 mgm.) and cyclizine hydrochloride (50 mgm.) in each tablet. The inclusion of cyclizine hydrochloride not only eliminates the nausea and vomiting often associated with migraine but also **enables larger and more effective doses of ergotamine to be administered.**

'migril'
BRAND

Ergotamine Compound *(Compressed)*
PACKS OF 10 AND 100

BURROUGHS WELLCOME & CO. (THE WELLCOME FOUNDATION LTD.) LONDON

When convalescence drags

and they shake

their heads at everything,

one naturally thinks of

CYTACON

Trade Mark

oral vitamin B_{12}

Average dosage

Tablets: 1 to 3 daily.

Liquid: 1 to 2 teaspoonsful daily.

TABLETS 50 Micrograms: bottles of 25 and 250.

LIQUID (25 micrograms per fluid drachm) 6 oz. and 80 oz. bottles

GLAXO LABORATORIES LTD. GREENFORD MIDDLESEX BYRON 3434

BACTERIOLOGY IN MODERN MEDICINE *

J. W. HOWIE
M.D. Aberd.
PROFESSOR OF BACTERIOLOGY, UNIVERSITY OF GLASGOW; BACTERIOLOGIST TO THE WESTERN INFIRMARY OF GLASGOW

TWENTY-FIVE years ago, when I first contemplated a career in bacteriology, a trusted senior on the clinical side advised me: "The subject is dead; take up biochemistry—or psychiatry!" Five years ago, when I pressed for more laboratory accommodation in Glasgow, I was asked how long it would be before antibiotics killed the subject as one of medical importance. In the five years since that question was asked the number of specimens submitted to my own department has increased each year and the examinations desired have become more numerous and more complex. The opening of new bacteriology departments has made it clear that there has been and still remains an extensive unsatisfied requirement for bacteriological diagnostic work and for the kind of help that can be furnished only by a bacteriologist able to welcome the presentation of a problem and able to examine and discuss all its aspects with those who need his help, whether or not they know their need. Naturally, this does not surprise me—for I never seriously contemplated accepting the advice to become either biochemist or psychiatrist—and it may be useful if I attempt to set out my idea of where bacteriology stands today in the world of medicine.

The Names We Use

To the medical student, the subject is "bugs," and I shall not set myself against history and tradition by complaining too loudly about this now almost affectionate although wrong description. I am anxious, however, to explain to graduate colleagues in medicine some deep differences between bugs and bacteria. If these differences are not fully understood, such ignorance may seriously hamper even a modest understanding of the medical significance of bacteria. Compared with bacteria, bugs are creatures of considerable size, of well-defined and stable structure and function, of slow growth and metabolism, of limited distribution, and of revolting appearance; nobody with an interest in hygiene or æsthetics could remain inactive if he found a patient or his surroundings infested with bugs. Actually there is little or no evidence connecting bugs with the spread of infectious diseases, though there is plenty to link other insects—mosquitoes, lice, ticks, fleas, and flies—with the spread of such infections as malaria, yellow fever, plague, typhus, sleeping-sickness, and dysentery; and I think that this explains how the medical students' gift for inaccurate condensation has led to the equation of bugs with bacteria. Compared with bugs, however, bacteria are of remarkably variable structure and function of a nearly incredible rate of growth and capacity for chemical action, of universal distribution, and of the most pleasing appearance. Once they have set up disease in a patient their control by subtle and intelligent methods rather than their elimination by ill-directed and over-enthusiastic chemotherapy is the proper objective of the wise doctor; and it is very important to emphasise that misguided and over-energetic efforts at elimination not infrequently succeed only in damaging the patient—and even in eliminating him—without necessarily affecting the bacteria that cause his illness. (I shall return to this when I discuss antibiotics.)

Microbiology and Virology

Meanwhile, I wish to define and explain some of the names in current use. First, we have to consider the names given to different parts of the subject of bacteriology and to get our minds clear about the function of each part. When, from 1857 onwards, the work of Pasteur and those who followed him turned bacteriology from a conjecture into a scientific discipline, the subject made an immediate impact upon medicine. So important indeed were the applications of bacteriology to medicine that it was not until about twenty years ago that the teaching of bacteriology in British universities was anywhere very much more than what was found in the courses of instruction for undergraduates and graduates in medicine; although a little of the subject was also taught to students of agriculture. There was no teaching of bacteriology as a pure science. I must emphasise that medical men and others, although their original interest was in the effects of a few bacteria, nevertheless contributed greatly to the fundamental knowledge of bacteria as living creatures, and it was largely their work which established that bacteria ought to be studied for their own sake—just as plants and animals are studied by botanists and zoologists. The very necessary pure-science study of bacteriology has led in many universities and technical schools to the establishment of departments of what are called "microbiology." In my view this is a real misfortune of nomenclature. If we ask what microbiology is, and if we take as our guide that excellent publication the *Journal of General Microbiology*, we shall find that about three-quarters of the papers published in that journal deal with bacteria, although the journal is prepared to accept papers on bacteria, protozoa, fungi, microscopic algæ, and viruses. The point seems clear to me that microbiology covers so wide a field that no serious scientist may reasonably claim to be able to profess it or can even imagine the structure of a single university department which would adequately provide for it in the sense of giving a fair chance to such a wide range of varied and important activities. I could imagine a department of medical microbiology, although I think that the virologists would soon become an uncomfortably large part of it. On the whole, I shall be happier to accept the realities imposed by the number of journals and scientific meetings that a professor can competently deal with—allowing that his wife and children should occasionally be able to see and speak to him between meals. As I see them, these realities also correspond with natural divisions of microbiology imposed by the ready availability of material. In Glasgow University at this moment, not so much from deliberate choice as from the struggle for accommodation, we have medical bacteriology at the Western and Royal Infirmaries, virology at Ruchill fever hospital, and pure-science bacteriology in the university at Anderson's College.

It seems to me that we have here by fortunate chance three subdivisions which are necessarily associated in their beginnings, and will always be the better of each others' company and support, but which are capable of an increasing degree of functional and administrative differentiation. I have taken some trouble to explain all this because I think it important that medical men should be aware of what is happening to this subject—a subject of which I think that many of them have a rather vague awareness, although I am happy to believe they entertain a quite warm-hearted regard for its practitioners. It is well that I emphasise that virology, one of the obvious growing-points of medicine, is rapidly expanding in its range, literature, and techniques so that it is becoming a scientific and medical specialty in its own right. Virology covers diseases of great communal importance—poliomyelitis, influenza, the common cold, for example—and much more of its material is found in general practice and in the infectious-diseases hospitals than in the general hospitals.

* Presidential address to the Royal Medico-Chirurgical Society of Glasgow on Oct. 5, 1956.

Virology has naturally much in common with bacteriology, and as the techniques of virology become more adaptable and less greedy of time and specialised skill, we may look to that branch for greater developments than we have yet seen. The general public and many doctors, I suppose, have become aware of virology through the press publicity which has naturally been given to the development of a vaccine against poliomyelitis.

PROSPECTS OF VACCINES

This particular activity is not the virologists' most solid claim to a place, and I am quite sure that the current vaccines are not the virologists' last word against poliomyelitis; it is certainly not the vaccine of whose value they are most confident. But the publicity attending poliomyelitis vaccine will have done some good if it has helped to direct necessary support and money to this important branch of medicine. In the field of virology we meet two of the most unequivocally successful vaccines known to medicine—those against yellow fever and smallpox. If we use the known facts about these we may be able to formulate in general terms three ingredients for a high degree of success in a preventive vaccine: (1) the causal agent is known and is of one or only very few antigenic types; (2) the causal agent, or one very nearly identical with it in antigenic structure, may be produced in quantity and attenuated in virulence in living form; and (3) the causal agent produces its pathological effects only after traversing the bloodstream, where it is exposed to the circulating antibodies, before it reaches the particular organ or tissue where it produces the disease that it causes. In yellow fever and smallpox all three requirements are met; in poliomyelitis the living attenuated form of vaccine is still experimental; in influenza the lack of all three ingredients of success may explain the difficulties in establishing active immunisation against influenza as a routine procedure. Enthusiastic workers are still fighting the problems set by influenza, as they have been for some twenty years. The common cold, along with various related forms of upper respiratory infection, is likely to prove extremely difficult to control by vaccine—if I have correctly estimated the needs for success.

The toxoids of diphtheria, tetanus, and botulinus are examples of highly successful but quite exceptional immunising agents. Here we have been able to identify, separate, purify, and attenuate the chemical product that is wholly and unequivocally responsible for the pathology—a method applicable only to the classic exotoxin-producing micro-organisms.

SOME BASIC FACTS

Pure-science studies of bacteria and viruses have greatly extended our knowledge in several directions during recent years. The ordinary light microscope enables us to magnify bacteria by about 1000 diameters—a magnification which would give a man of ordinary height an image of over one mile—but the electron microscope makes commonplace a well-resolved image of from 10,000–30,000 diameters. This has greatly added to an understanding of the anatomy of viruses and bacteria, and I think that we have not yet fully understood how great an advance this represents of our attempts to analyse the structure and function of these smallest forms of life. The phase-contrast microscope, the ultraviolet microscope, and refined methods of staining bacteria without grossly distorting them have all revealed details of their inner structure which have conveniently become available at a time when the subject of bacterial heredity is topical. I shall not enter into the details of this exciting and controversial area of knowledge—for an understanding of which a training both in biochemistry and psychiatry would have been a useful preparation!—but I am prepared to state that bacteria contain material chemically akin to the constituents of the nuclei of plant and animal cells, that this material is partitioned among dividing bacterial cells, and not only that bacteria show variation and mutation, which has long been known, but that identifiable components of one bacterium are capable of being assimilated by another and transmitted to the descendants of that other with the production of a race having a structure and properties not identical with those of the parent organisms. These facts will not be disputed, I believe; it is only when we come to argue whether bacteria have "nuclei" or undergo "sexual reproduction" that difficulty arises about the precise use of these terms. What ought not to surprise us—and I think that medical men never had difficulty in this regard—is that successive generations of bacteria may have fundamental differences from those that preceded them and that the physical and chemical effects produced by a bacterial population even in a defined environment may be unpredictable on the basis of previous experience. This is very irritating and it sometimes annoys pure scientists very considerably. Some remarkable phenomena, of course, have been reported by pure scientists who have studied bacterial chemistry without the benefit of knowing whether their cultures were pure or mixed; but quite apart from fallacies of this kind it is often hard for the pure scientist to know what to make of creatures which undergo such rapid and such important changes even when a single cell is propagated in a chemically defined medium. But if we allow for variation, mutation, and such sexual-like activities as transduction and transformation, and for the appearance of a new generation every twenty minutes, we ought, as doctors, to be incapable of being surprised by the changing manifestations of infective agents in so inconstant an environment as that provided by man and animals. And yet it is no uncomonm experience to find both doctors and their patients apparently puzzled about why epidemics should wax and wane and why this person should be stricken and his neighbour escape—as if there ought to be a simple answer if we could only think of it! What surprises me about bacteria and viruses is not the extent or the rapidity of their variations, but the degree to which, by various highly artificial methods, we have been able to give some of their characters enough reproducibility in successive cultures to allow us to recognise the creatures and identify them by name.

It is for this reason that I take what I hope will be identified as a modest standpoint over the naming of bacteria themselves.

Genera, Species, and Types

Scientific students of bacteriology naturally try to arrange bacteria in a regular fashion into orders, tribes, families, genera, species, and types, to which, by rules which are continually debated, they attach what they regard as valid names. This activity should not be regarded as unimportant. It is indeed a vital necessity for the scientific study of bacteria. Unfortunately, both the rules of the game and the bacteria themselves are not very stable. Moreover, bacteriologists tend to attach importance to the bacterial characters in which they themselves are interested: the fermentation chemist wishes to know which carbohydrates they will break down; the immunologist wishes to know the last details of their protein structure; the epidemiologist wishes to know their different habitats and how they get from one to another; and the doctor and his patients are concerned only in whether they are poisonous or harmless. For these reasons the names given to bacteria are liable to rather frequent changes as new work and changing perspectives constantly tend to adjust what seem to be their significant relationships among each other. Thus, even in the past twenty years,

one organism has been named: *Bacillus typhosus*, *Eberthella typhi*, *Bacterium typhosum*, and now *Salmonella typhi* or *Salmonella typhosa* according to taste. In medical practice these changes are both confusing and unnecessary and I think that medical bacteriologists in communicating with medical practitioners should avoid using generic and specific names and content themselves with common names. In my own practice I have always reported this organism to doctors as "the typhoid bacillus." This is scientifically permissible, I am happy to know, and in medical practice it is all that is necessary in order to designate the causal agent of typhoid fever. Medical practitioners are interested only in the disease-producing potentialities of bacteria, and the stable common names that have served for so long are well known and understood. It is right that scientific bacteriologists should debate among themselves about the appropriate definitions of Mycobacterium, Actinomyces, Clostridium, Corynebacterium, and others, but their communications to medical men will be less open to misinterpretation if they refer to the tubercle bacillus, the bacillus of actinomycosis, the tetanus bacillus, the diphtheria bacillus, and so forth. Medical practitioners with too little time for detailed reading are very apt to dismiss bacteriology as beyond their understanding if unstable nomenclature puts avoidable difficulty in the way of their quickly identifying the organisms of importance to their patients. I commend these simple usages to m[illegible]ical bacteriologists; if they wish to flash their new genera under bright lights let them do it at each other.

One aspect of classification of great importance to medicine, especially to preventive medicine, is the great progress made in the difficult and exacting business of identifying a great many different types—for example among streptococci, staphylococci, typhoid bacilli, food-poisoning salmonellas, and other organisms. This work is essentially a task for specialists, who have developed and standardised such methods as antigenic analysis, phage-typing, toxin-antitoxin assays, and so forth. The great array of types is dismaying to the general bacteriologist, who finds that the knowledge gained by hard study is so quickly made old-fashioned by the rapidly extended minutiæ of some very narrow specialist—"a mere streptococcologist," as one of my colleagues characterised one such worthy person. Yet this multiplication of types, tedious as their identification is in practice, has made possible a great extension of knowledge about how infection spreads within the community. If it is possible to show that the vomiting and diarrhœa which afflicts the wedding party has been caused by a staphylococcus of the same phage-type as that isolated from the so-called cream of the trifle, and that this staphylococcus in turn is identical with that from the septic finger of the cook who prepared the cream and left it in the warm kitchen overnight, we know how to save the next wedding festival from one at least of the hazards of such occasions. This is only one example, and not the most important, of the kind of preventive medicine that is made possible by an epidemiologist working with a highly specialised bacteriologist. I must emphasise that the trained workers, the other resources, and the will and coöperation required for this kind of bacteriology and public-health practice are so far capable of being mustered in only a few fortunate places. In this field there are great possibilities, and I emphasise their importance, paying tribute as I do so to the valuable work of the Public Health Laboratory Service.

Antibiotics

Antibiotics, together with modern developments of immunology, have given us enormous powers of control over a great many infections. Those who qualified in medicine some twenty-five years ago did not expect to see dramatic reductions in the deaths from pneumococcal pneumonia, puerperal sepsis, tuberculosis, diphtheria, meningitis, generalised streptococcal infections, yellow fever, typhus, and plague. These diseases were rightly feared, and it is well to remember with respect and gratitude the intelligence and devotion of those whose work made possible these victories. Some of the work was brilliant, much more of it was simply intelligent and persistent. Some of it was done in small back rooms with poor facilities, but a great deal of it was made possible only by great expenditures of money both by governments and commercial firms. One result of these notable triumphs is, as I see it, a prevalent misapprehension among both patients and doctors that nobody should now ever die of, or even suffer much inconvenience from, an infection.

In trying to analyse the genesis and consequences of this attitude, it is important to recall the drama of the unfolding triumphs of chemotherapy of bacterial infections from the time of the first sulphonamides in 1935 to the latest antibiotic. Especially after the appearance of penicillin, sensational recoveries from hitherto incurable conditions received the press publicity naturally and properly attached to events of great personal and public interest and significance. But the whole nature of the technical processes involved was not capable of being accurately described in simple terms; much indeed is still conjecture about the mode of action of most of the drugs that have saved so many lives. Nevertheless, misleading simplifications abounded in the minds of doctors as well as of laymen. Perhaps also the development of chemotherapy in the mental climate of the war years explained the precise nature of some of the popular ideas that are at best imperfect simplifications of complex truths.

It is widely understood, and it is correct, that insufficient dosage may allow bacteria to survive treatment and cause relapse of the infection. It is also true that in some lesions, such as endocarditis, the causal organisms are not easily reached by drugs and are not subjected to the natural antibactérial mechanisms; in these infections success depends upon the long-continued administration of powerful drugs in high enough dosage to ensure that all the bacteria may be reached and killed by the drugs alone. But the exceptional nature of the host-drug-parasite relationship in endocarditis, for example, is not always appreciated. Quite early after penicillin became available, moreover, it was found that infections due to some very sensitive organisms—the gonococcus, for example—were quickly controlled by one or two injections if the dose were big enough. Combined chemotherapy became popular in medicine perhaps on the analogy that combined operations were successful in war. Battles of annihilation and the results of mass bombing raids were constantly before us. Perhaps, therefore, doctors came to picture themselves as generals directing attacks against bacterial invaders and considered it their duty to throw everything they had against every challenge. In this climate of opinion very large doses became the rule and patient and doctor alike expected rapid victory. I know of a patient, not in my own hospital, who received penicillin at 9 A.M., streptomycin at 10 A.M., chlortetracycline (aureomycin) at 11 A.M., and oxytetracycline (terramycin) at 12. At 1 P.M. the cycle began again with penicillin. I have heard of doctors who never gave less than 1 million units of penicillin in a single dose.

Such treatment is wrong. There are places where even clean surgical operations of a minor nature are never undertaken without "antibiotic cover," and there are doctors who have only to discover a pyrexia of whatever degree or duration to prescribe a course of some antibiotic. Unfortunately bacteria are too adaptable to be conquered in this haphazard way. We had better recog-

nise that our body surfaces provide such ideal fodder and conditions for bacterial survival and growth that they will always be inhabited by some micro-organisms. We must accept the commensal existence thus imposed upon us and develop our ideas towards looking for additional ways of holding even that happy balance between ourselves and our organisms which secures a fair chance of life for both parties. Bacteria know nothing of unconditional surrender, and throwing great quantities of every drug against every infection will ensure only a steady decrease of satisfactory responses and a steady increase of toxic reactions, sensitised patients, and resistant bacteria.

Minor infections, many of them caused by viruses, which do not respond to drug treatment, do not require chemotherapy. If a practitioner judges that his patient's condition requires intervention he should base his choice of drug on his knowledge of what is the likely cause. Further he should have a specimen taken for bacteriological examination to check whether his diagnosis is correct, and he should change the treatment if the report shows that his first estimate of the situation is wrong. In any case he should not leave his patient under treatment for more than a few days if a response is lacking.

I realise that I am inviting practitioners to demand a good and sufficient bacteriological service, but I have no hesitation in asserting that they deserve it and that the needs of their patients demand it. When I speak of a good and sufficient service I mean one in which it is possible and easy for bacteriologist and doctor to meet face to face whenever that is necessary in order to ensure that the right examinations are made and the meaning of the results is understood. Without such arrangements I doubt if bacteriology will ever make the contribution which is required of it by modern medicine. In recent years some real improvements in the available service have indeed been apparent, but much has still to be done, especially for general practitioners. But the dramatic early results of chemotherapy were not matters of chance. Fundamental research in bacteriology made the miracles possible, and the day-to-day routine bacteriology of hospitals was necessary to keep the miracles going. When the new drugs were scarce each case for treatment was chosen with care and treatment was accurately controlled. This was an important reason why failures were few, and we shall not avoid disillusionment unless a wider understanding and more widespread practice of bacteriology ends some of the grosser blunders that are now being far too widely perpetrated.

My picture of a good laboratory is of a place to which clinicians go without hesitation for a talk about their problems; my idea of a good clinician is of a man who insists on having laboratory examinations done and reports of them which he understands.

Dirty Hospitals

One function of a medical bacteriologist is to emphasise the dangers to patients who are treated in a hospital that is not clean. It cheers me to see a good deal of evidence that boards of management are now able to spend a little money in giving their hospitals a clean and wholesome external appearance. Many hospitals once visibly dirty and depressing have now been brightened with fresh paint. Smaller and more cheerful wards are now the rule, and insect life in hospital kitchens is not the abundant and flourishing disgrace that it once was. The "bugs" are being eliminated! But bacteriologists have still a great deal to do to educate administrators, clinicians, and nurses about making hospitals bacteriologically clean.

The disease-producing effects of bacteria as revealed in our patients' illnesses excite our desires to attack the bacteria in our patients' tissues. As I have already indicated, intelligent and calculated methods are called for in this process, and there is real danger to patients in over-enthusiastic, indiscriminate use of antibiotics. But the situation is quite different if the bacteria are in the hospital environment and have not yet invaded the patient. Then we may and should attack them with warlike zeal—and I wonder why we often so pitifully fail in this elementary task. Are we so defective in our understanding of bacteria that we have a will to attack them only after they have revealed their presence by producing disease? We attack the cockroaches in the kitchen, but we suck the hospital staphylococci and clostridia through our operating-theatres. We insist on a clean water-supply, but we allow our hospital cooks to prepare some of their stews and meat dishes exactly as if they were bacteriologists intent upon growing cultures of anaerobes. Not surprisingly, the cooks often have great success with their cultures, and some unfortunate patients have diarrhœa. This diarrhœa is one of the hidden menaces of hospital life—and hidden is the operative word. Much of it could be eliminated by correct use of enough pressure cookers and refrigerators.

The nurses wash our patients' faces till they shine, but how do they clean the bedpans? Wounds are dressed in open wards by figures that are gowned, gloved, and masked, but the air is full of the fluff of blankets and that is rich in bacteria. Elaborate and costly pieces of apparatus fill steriliising-rooms with steam that attacks the fabric of the walls, but do they sterilise the dressings within them? Who knows? How many surgeons could operate their own dressing-sterilisers? The theatre sister or staff nurse is very conscientious and intelligent and she looks after the steriliser. But her present steriliser is not identical with the one in the theatre where she trained so she has modified its operation a little to bring it into line with what she knows. But, as sister operates it, is the steriliser producing pure steam? Does it automatically discharge its air and condensate during sterilisation? Does it contaminate dressings in drying them? The surgeon who does not know the answers to these questions does not know if he is practising asepsis. Is the glove-powder sterile? Are the drums too tightly packed? How many clean wounds become infected? Estimates may range from 2 to 5% but the very few ascertained and published facts have revealed from 15 to 40%. Every now and then disasters of postoperative tetanus and gas-gangrene force an overhaul of the situation. But the situation should be continually checked.

The bacteriologist's duty is to keep the facts before his colleagues and to give the full resources of his department to present a true assessment of every problem of this kind that comes to his notice or that he seeks out by his own efforts. The situation is difficult because so many are involved. The fabric of most of our hospitals is not good enough by modern standards, but our economic state does not yet allow us the building works required to make good all our deficiencies. The results of hospital treatment appear good in a broad way, and human tissues, given a chance, make up for many deficiencies. For this reason action tends to await the stimulus of a disaster.

Some have advocated a hospital-infection committee with the medical officer of health as one of its members; and the educative value of such a body should not be ignored. Others, understandably sceptical about still another committee, advocate the appointment of a full-time hospital infection-officer of senior consultant status. But dictators are not part of our tradition, and I think that this would be a difficult post to fill with the right person, although it has been done. Certainly the

watch upon hospital infection ought to be more than a side-line of the bacteriology department; but I think that it is an essential part of the department's duty to ascertain and publish the facts so that we come to recognise more fully than we do that it is wrong and quite unnecessary to expose sick people to the hazards of dirty hospitals.

Summary

Bacteriology is now being studied as a pure science. As living creatures, bacteria present some unique features and properties which make them worth studying for their own sake. Bacteria are infinitely adaptable and versatile, but an increased understanding of their anatomy and physiology has given us a much better prospect of living on even terms with those that find the human race an acceptable habitat.

Viruses have emerged as objects requiring similar but more specialised study. Our ideas of how to produce effective protection by artificial immunisation have made spectacular progress.

Chemotherapy has given us life-saving powers over many of the killing infections, but our new drugs will lose their effect, and may even do harm, unless our use of them is based upon a much greater understanding of bacteriology among doctors. This will not be possible without a substantial increase in the number of adequately trained bacteriologists practising their profession in good laboratories whose doors are wide open to doctors in hospitals, in public health, and in general practice.

New and more precise methods of identifying individual types and strains of bacteria have allowed us to trace with great precision how some infections spread within the community. This new knowledge of the epidemiology of bacterial and virus infections has important applications to public health and preventive medicine.

In this important matter our hospitals are not yet all that they should be; they are places where infection is all too easily spread among patients and staff because an adequate understanding of bacteriology has not yet been brought to bear fully on our methods of providing clean food, pure air, and sterile dressings.

Bacteriology has made great contributions to medical science. The future holds promise of exciting discoveries. The present situation challenges us to apply effectively what is already known.

". . . The problems raised by the different ways of life and occupations of the patients, even though they are all suffering from the one disease, rheumatoid arthritis, necessitate an individual approach with regard to treatment and the planning of management in each case. We have learned that, before starting, a correct and detailed diagnosis must be made. . . . Our experience has brought out one small point that is of interest, viz., that an initial period in hospital of at least four weeks is often necessary before the assessment is completed, as fatigue and a sense of hopelessness may need to be relieved before the patient's true personality and potentialities can be assessed.

Unless the problem that each patient presents is defined and the manner in which it is intended that it is to be solved is clearly outlined, we shall fail. Failure means that, apart from solving the problem for the patient, thousands of hours by the skilled members of the team are spent on work which has no or little chance of succeeding. We believe that twenty hours' work on someone who does not need or does not wish to get well is a waste of time, but two thousand hours' work, such as is spent on some of our seriously crippled patients is small when it enables a man who has been bedridden for five years or more to work again as a free man and contented citizen, making his contribution to the community of which he is a part. Many such people have passed through our unit."—Dr. FRANCIS BACH, *Social Service Quarterly*, Autumn, 1956.

SEX-HORMONE EXCRETION AFTER BILATERAL ADRENALECTOMY AND OÖPHORECTOMY IN PATIENTS WITH MAMMARY CARCINOMA

J. A. STRONG
M.B.E., B.A., M.B. Dubl., M.R.C.P., M.R.C.P.E.
PHYSICIAN, WESTERN GENERAL HOSPITAL, EDINBURGH

J. B. BROWN
M.Sc. N.Z., Ph.D. Edin.
MEMBER, SCIENTIFIC STAFF, MEDICAL RESEARCH COUNCIL

JOHN BRUCE
C.B.E., T.D., M.B. Edin., F.R.C.S.E.
REGIUS PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF EDINBURGH

MARY DOUGLAS
M.D. Edin., F.F.R.
RADIOTHERAPIST, ROYAL INFIRMARY AND WESTERN GENERAL HOSPITAL, EDINBURGH

A. I. KLOPPER
M.B., B.Sc. Witw'srand, M.R.C.O.G.
MEMBER, SCIENTIFIC STAFF, MEDICAL RESEARCH COUNCIL

J. A. LORAINE
M.B., Ph.D. Edin., M.R.C.P.E.
MEMBER, SCIENTIFIC STAFF, MEDICAL RESEARCH COUNCIL

From the Departments of Medicine, Surgery, and Radiotherapy and the Clinical Endocrinology Research Unit (Medical Research Council), University of Edinburgh

MANY methods have been proposed for the hormonal treatment of mammary carcinoma. These have included bilateral oöphorectomy, bilateral adrenalectomy, hypophysectomy, and the use of œstrogens or androgens (Beatson 1896, Loeser 1938, Haddow et al. 1944, Huggins and Bergenstal 1952, Luft and Olivecrona 1953). The reasons why certain forms of therapy are beneficial in some patients and harmful in others remain obscure. For example, it is paradoxical that in some patients favourable responses follow the administration of synthetic œstrogens, whereas in others, who appear to be clinically similar, the progress of the disease is accelerated.

It has been widely assumed that cases of breast cancer may be divided into two main groups: (1) the "hormone-dependent," in which a response is obtained with one or some of the methods of treatment already enumerated, and (2) the "hormone-independent," in which progress is apparently uninfluenced by these forms of treatment (Huggins and Dao 1954).

This classification is probably too rigid, and may be misleading. For example, failure to respond to œstrogens may be regarded as "hormone independence," whereas a favourable response might well have been obtained by alternative forms of treatment, such as adrenalectomy or hypophysectomy. Again, when treatment depends on the complete removal of the sources of sex hormones, failure to obtain a favourable response might result from incomplete removal of these sources rather than from any intrinsic character of the tumour itself.

Until recently there have been no reliable and truly objective methods for assessing the sex-hormone status of patients with mammary carcinoma, either before or after treatment. This is one of the principal reasons why treatment of the disease is still empirical. Within the past few years methods have been developed in the laboratory of the Clinical Endocrinology Research Unit (M.R.C.) for the quantitative determination of œstrogens, pregnanediol, and pituitary gonadotrophins in urine. These techniques appear to be sufficiently reliable to permit estimation of the excretion of these substances

in postmenopausal patients, amongst whom breast cancer most frequently occurs.

Ovarian hormones, and œstrogens in particular, are well known to influence the behaviour of some mammary cancers, and it is clearly most important that this relationship should be examined as fully as possible. Progesterone is secreted by the corpus luteum of the ovary and has also been isolated from ox adrenals. This hormone is known to modify the biological activity of the œstrogens, and the measurement of urinary pregnanediol is a convenient method of studying one of the excretion products of progesterone. When a luteal or placental origin can be excluded, the estimation of urinary pregnanediol has also been found to provide a useful index of adrenocortical activity (Klopper, Strong, and Cook 1956). The assay of urinary gonadotrophin is the only satisfactory direct measure of pituitary activity at present applicable to mammary cancer. It has been suggested that these estimations may be of prognostic value in this disease (Segaloff et al. 1954). For these reasons, therefore, the excretion of all these substances in the urine of patients with carcinoma of the breast is being studied.

The patients in the present investigation had been treated by mastectomy when considered appropriate, radiotherapy, œstrogens, or androgens, and only when they had failed to respond favourably to the simpler and more conventional forms of therapy were they subjected to bilateral adrenalectomy and oöphorectomy.

Our chief aim has been to compare the pattern of hormone excretion in patients who responded favourably to adrenalectomy and oöphorectomy with that in patients who did not respond to these operations. Hormone excretion after the infusion of intravenous corticotrophin (A.C.T.H.) has also been studied as a test of the presence of any adrenocortical tissue which might remain after operation. Details are given of the output of hormones by a postmenopausal patient before, during, and after bilateral adrenalectomy and oöphorectomy.

Methods

Œstrogens in urine were estimated by the method of Brown (1955a). This procedure measures œstrone, œstradiol-17β, and œstriol. Though the accuracy of the method decreases when the amount of each œstrogen present is less than 5 μg. per twenty-four hours, results above 1 μg. of œstrone and œstradiol-17β, and above 1·5 μg. of œstriol probably retain definite quantitative significance (British Empire Cancer Campaign 1956). It should be emphasised that two other œstrogens known to occur in human urine are not estimated by this method—namely, 16-epiœstriol (Marrian and Bauld 1955) and 16α-hydroxyœstrone (Marrian et al. 1956).

Pregnanediol (5β-pregnane-3α : 20α-diol) was measured by the method of Klopper, Michie, and Brown (1955). This method is more sensitive and more specific than any previously published. It will measure accurately amounts of pregnanediol as small as 0·5 mg. in a twenty-four-hour collection of urine. It is therefore capable of measuring the changes in the excretion of pregnanediol arising from the adrenal as well as from the ovary and placenta. Amounts of pregnanediol less than 0·25 mg. per twenty-four hours' urine cannot be recovered by the method used, and between 0·25 and 0·5 mg. per twenty-four hours the recoveries are poor. Hence values of less than 0·25 mg. per twenty-four hours (including some of the post-adrenalectomy findings) cannot be regarded as a certain index of the presence of pregnanediol, and the quantitative significance of values below 0·5 mg. per twenty-four hours is also doubtful.

In all the patients in this series the ovaries were removed as well as the adrenals. The results shown in fig. 1 were obtained from a postmenopausal patient aged 69. It is likely that the pregnanediol measured originated from the adrenals. The rôle of the adrenals in the production of urinary pregnanediol has been described elsewhere (Klopper et al. 1956).

17-ketosteroids were measured by the method recommended by the Committee on Clinical Endocrinology (Medical Research Council 1951).

Gonadotrophins.—Assays were conducted by the technique described by Loraine and Brown (1956). The end-point of the bio-assay depends on the enlargement of the uterus in intact immature mice. This test is not specific for either follicle-stimulating hormone or interstitial-cell-stimulating hormone and probably measures a mixture of both activities. Results of assays were expressed in terms of human menopausal gonadotrophin as H.M.G. units per twenty-four hours (Loraine and Brown 1956). The standard (H.M.G.-20A) was prepared by Messrs. Organon from the urine of menopausal and postmenopausal women. One unit was defined as the activity contained in 1 mg. of the standard preparation.

After estimation of the steroid hormones the remaining urine of each day's collection was combined in forty-eight-hour or seventy-two-hour samples to obtain sufficient material for gonadotrophin assay. The normal excretion range in postmenopausal women aged 50–70, estimated in this laboratory, lies between 19 and 102 units (H.M.G.-20A) per twenty-four hours ($P = 0.95$) (unpublished observations).

Eosinophil-counts were done on capillary blood before and during the infusion of corticotrophin.

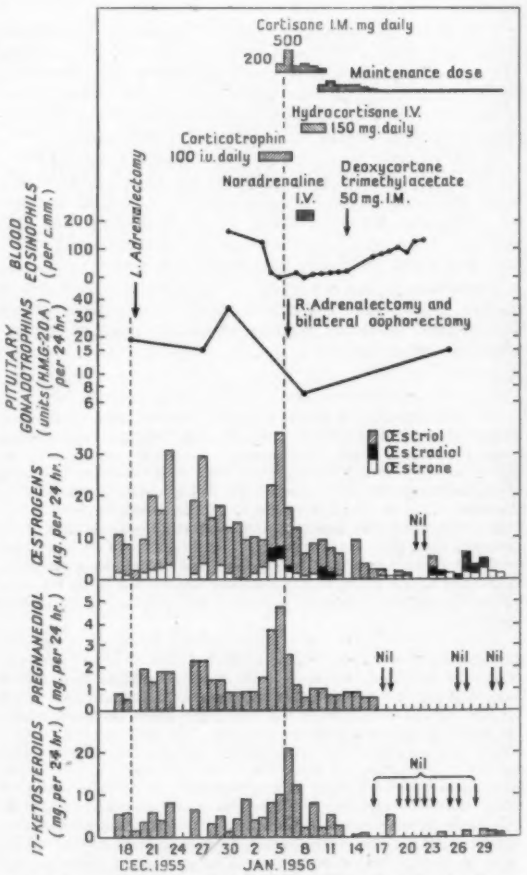


Fig. 1—Excretion of hormones by woman, aged 69, undergoing bilateral adrenalectomy and oöphorectomy in two stages.

Corticotrophin was given by continuous intravenous infusion for forty-eight hours. 10 I.U. of a preparation made by Messrs. Armour and certified as suitable for intravenous use was dissolved in a pint of isotonic glucose-saline solution immediately before use. A total of 60 I.U. per forty-eight hours was infused at a rate of 10 units per eight hours.

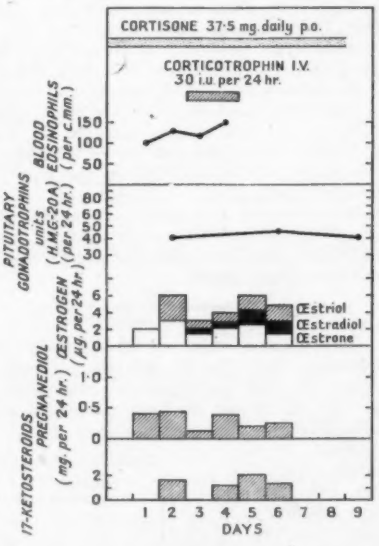


Fig. 2—Effect of intravenous corticotrophin on excretion of hormones after adrenalectomy and oöphorectomy in patient aged 58.

Clinical assessment of the response to operation was made by at least two observers, and for the purpose of this paper the patients have been divided into two groups—namely, those in whom there was no reasonable doubt that a remission of disease had occurred, and the remainder. The second group includes patients in whom the progress of the disease may well have been slowed, but none of these showed definite regression of the lesions present before operation.

Results

Hormone Excretion at the Time of Adrenalectomy

The findings of a single typical case are shown in fig. 1. The patient, aged 69, had a large inoperable tumour of the right breast, which was eroding the overlying skin. She had been treated for six weeks with stilbœstrol dipropionate 5 mg. twice daily, but the condition of the tumour deteriorated. Subsequently she received six weekly injections of testosterone phenyl propionate 100 mg. without obvious effect on the tumour. As improvement did not follow these simpler forms of treatment, bilateral adrenalectomy and oöphorectomy was performed in two stages. Thereafter the tumour showed a striking degree of regression.

Immediately before the first operation the patient was excreting amounts of œstrogens, pregnanediol, and 17-ketosteroids which were within the normal range for a patient in this age-group. After removal of the first adrenal, there was a considerable increase in the excretion of both œstrogens and pregnanediol but little change in the output of 17-ketosteroids. Similar increases have been observed in other patients with intact adrenals after operation. It is likely that in this patient the source of these hormones was the single remaining adrenal rather than the ovaries, and that this gland had responded in the usual way to the stimulus of operation by an increased output of hormone.

For three days before removal of the second adrenal and both ovaries the patient was given a single daily injection of 100 I.U. of corticotrophin ('Acthar gel'). The marked rise in the excretion of œstrogens and pregnanediol, and to a slight extent of 17-ketosteroids, which again followed is typical of the response found after adrenal stimulation by corticotrophin or by operative trauma (unpublished observations). The output of these hormones in the urine declined rapidly in the seven days following the second operation.

It will be noted that, whereas the excretion of œstrogens and pregnanediol was maximal on the day preceding the second operation, when corticotrophin was being given, the greatest amount of 17-ketosteroids was excreted on the day of operation. On that day the patient received a large quantity of cortisone (500 mg.) by intramuscular injection; and probably these large quantities of 17-ketosteroids were to some extent metabolic products of cortisone.

Gonadotrophin excretion remained relatively low, for a patient of this age, throughout the period of these operations. The output before any treatment had been given was considerably greater, and the low excretion at the time of adrenalectomy may have been the result of earlier treatment with stilbœstrol and testosterone phenyl propionate.

Hormone Excretion after Bilateral Adrenalectomy and Oöphorectomy

The main purposes of this investigation were to seek evidence of residual adrenocortical tissue after bilateral adrenalectomy, and to compare the "successes" with the "failures."

13 patients have been examined at intervals ranging from six weeks to fifteen months after operation. Of these, 8 were classified as "successes" and 5 as "failures." One of the "failures" had survived operation by fifteen months, and another by almost eleven months at the time of this examination, but both have since died of their disease.

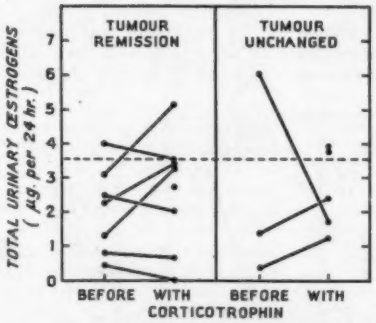


Fig. 3—Effect of corticotrophin on excretion of œstrogens after adrenalectomy and oöphorectomy: sum of three œstrogens excreted per 24 hours has been plotted in control period (before corticotrophin) and during infusion of corticotrophin. Interrupted line indicates level below which value would have no quantitative significance, on assumption that excretion-ratio remained œstrone: œstradiol: œstriol :: 1 : 1 : 1·5 (see text).

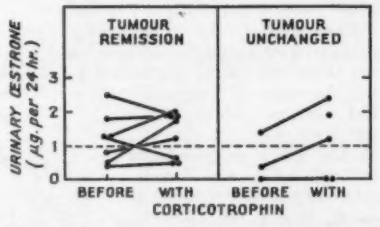


Fig. 4—Effect of corticotrophin on excretion of œstrone after adrenalectomy and oöphorectomy.

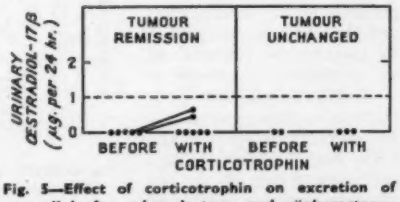


Fig. 5—Effect of corticotrophin on excretion of œstradiol after adrenalectomy and oöphorectomy.

The procedure adopted is illustrated in fig. 2. During the period of observation the patients, with one exception, were maintained on 25–50 mg. of cortisone daily. The exception (the only male in the series) had responded particularly well to adrenalectomy following orchidectomy a year earlier. During the period of postoperative investigation he was maintained on 1-1·5 mg. of 9α-fluorohydrocortisone daily by mouth.

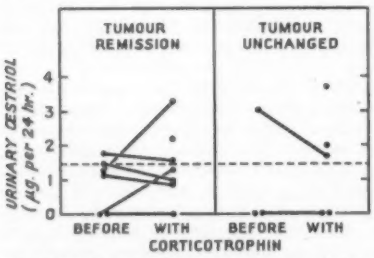


Fig. 6—Effect of corticotrophin on excretion of œstriol after adrenalectomy and oöphorectomy.

Urine was collected for a control period of at least forty-eight hours. Thereafter a continuous intravenous infusion of corticotrophin was given, as already described.

The results of the assays are shown in summary form in figs. 3–9, in which the mean excretion of hormone during the two days of corticotrophin infusion is compared with the mean for the preceding control period. These readings have been divided into two groups according to the clinical assessment of the patients from whom they were obtained.

Œstrogens.—It is apparent from figs. 3–6 that measurable amounts of œstrogen were being excreted by several of the patients. In figs. 3–7 a broken horizontal line has been drawn, and results lying on or above this are considered quantitatively significant, as defined in the section on methods. It will be seen that there was no apparent difference in œstrogen excretion between the two clinical groups.

Preliminary observations in another series of patients showed that administration of corticotrophin before adrenalectomy was followed by increased excretion of œstrogens, and fig. 1, taken from a patient with one adrenal, shows this effect. In the adrenalectomised patients, infusion of corticotrophin was not followed by any consistent and significant increase in the excretion of œstrogen. It seems reasonable to conclude therefore that the operation was complete in all the cases, and that the small amounts of apparent œstrogen present in the urine of the patients under consideration did not come from adrenocortical tissue. The evidence which follows also supports this conclusion.

Pregnanediol.—In this group of patients, neither those who responded to adrenalectomy and oöphorectomy nor those who were unaffected by the operation showed any increase of pregnanediol output when given corticotrophin (fig. 7). In so far as a response to corticotrophin would indicate the presence of adrenal tissue, it may be assumed that the operation was complete in all the cases. Failure to influence the progress of the disease cannot therefore be attributed to incomplete removal of the adrenocortical tissue.

17-Ketosteroids.—A proportion of the neutral 17-ketosteroids excreted in the urine may be derived from cortisone. Since all but one of these patients continued to take their usual maintenance dose of cortisone during this investigation, the quantities of 17-ketosteroids excreted can probably be accounted for as metabolic products of administered cortisone (fig. 8).

Gonadotrophins.—Although the number of observations is relatively small (fig. 9) there is no apparent difference between the two clinical groups.

Eosinophils.—The absence of a significant decrease in the number of eosinophils in the blood after an intravenous infusion of corticotrophin lasting forty-eight hours is strong supporting evidence of adrenal insufficiency. From fig. 10 it is clear that, by this criterion, none of these patients retained appreciable amounts of adrenocortical tissue.

Discussion

The clinical value of ablation of the ovaries, the adrenals, and the hypophysis, as well as the use of œstrogens and androgens, in controlling for a time the growth of certain mammary cancers, has already been established. Many suggestions have been made to explain why some patients do not respond to these procedures, while others are much improved, only to succumb later to a recrudescence of their disease. Few hormone assays have been reported to support these suggestions. Dao (1953) and Smith and Emerson (1954) estimated œstrogen in urine by biological methods in patients with mammary carcinoma. Jessiman and Moore (1956) recommended the use of such œstrogen assays, and suggested in addition that gonadotrophins should be determined by the method of Klinefelter et al. (1943). It is now widely recognised that such methods can at best be described as semiquantitative and should probably not be used in investigations of this type. The results reported here were obtained by methods that satisfy the criteria of accuracy, precision, sensitivity, and specificity defined by Borth (1952).

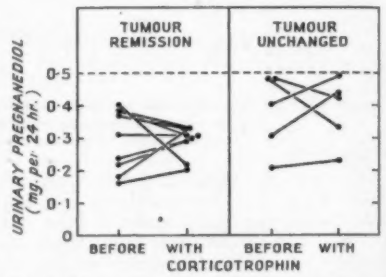


Fig. 7—Effect of corticotrophin on excretion of pregnanediol after adrenalectomy and oöphorectomy.

It was found that measurable, though small, amounts of œstrogens and pregnanediol were being excreted by some of these patients after bilateral adrenalectomy and

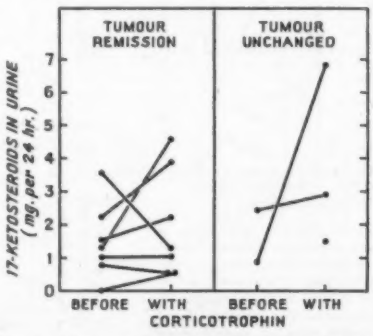


Fig. 8—Effect of corticotrophin on excretion of 17-ketosteroids after adrenalectomy and oöphorectomy.

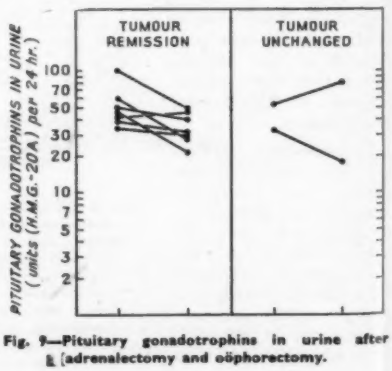


Fig. 9—Pituitary gonadotrophins in urine after [adrenalectomy and oöphorectomy.

oöphorectomy. The levels of œstrogen and pregnanediol in the urine after adrenalectomy could not be correlated with the response of the disease to the operation.

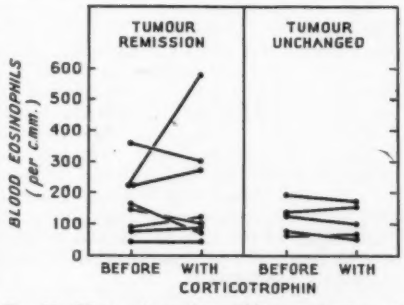


Fig. 10—Effect of corticotrophin on number of eosinophil's in capillary blood (average of two daily counts).

The evidence that the methods used for the determinations are valid was derived mainly from a study of normal urine; it might be argued that such methods might not be applicable to the quantities of steroids found in urine from adrenalectomised and oöphorectomised patients. The chromogenic materials measured as œstrogens and pregnanediol in the urine of these adrenalectomised patients are too small for chemical characterisation, and their nature cannot at present be regarded as established. Greenwood and Bulbrook (1956), using Brown's method for œstrogen assay, found even larger quantities of œstrogen than those reported here in the urine of some patients after adrenalectomy. Bulbrook et al. (1956) claim to have demonstrated œstrogenic activity by biological means in the urine of some patients subjected to bilateral adrenalectomy and oöphorectomy. If the steroid excretion of patients who responded well to operation differed substantially from that of patients who did not do so, the methods used in the present study should have been sufficiently reliable to show such a difference.

It has been suggested that a possible cause of lack of response to adrenalectomy is the persistence of fragments or rests of aberrant adrenocortical tissue. These might continue to produce the hormones which the operation was designed to eliminate. Graham (1953) found histological evidence of adrenocortical tissue in the region of the cœliac artery in 32 of 100 necropsies. Falls (1955) found similar tissue in the broad ligament on 7 of 30 consecutive gynæcological laparotomies. The infusion of intravenous corticotrophin is claimed to be the most powerful stimulus to adrenocortical tissue at present available (Bayliss and Steinbeck 1954). If the small amounts of apparent œstrogens and pregnanediol found in the urine of adrenalectomised patients in the present study were derived from aberrant adrenal tissue, or from fragments not removed at operation, the output of such steroids should have been increased by intravenous corticotrophin; yet none of the adrenalectomised patients showed a definite increase of excretion, nor did they show any appreciable decrease in eosinophils. It is therefore reasonable to conclude that the operation was complete, and that no functional adrenocortical tissue remained. If the substances measured were indeed 5β-pregnane-3α : 20α-diol, œstradiol-17β, œstrone, and œstriol, the site of origin of these steroids remains obscure. The possibility that they are derived from adrenal rests which do not respond to stimulation by corticotrophin cannot be entirely disregarded.

The absence of any difference in hormone excretion between the "success" and "failure" groups might be interpreted in more than one way. For example, one tumour may be susceptible to endocrine influence, whereas another, although histologically indistinguishable, may not. It is a matter of common clinical experience that one factor likely to influence the growth of mammary carcinoma is some alteration in hormonal environment. This may be produced either by the administration of hormones or by the removal of hormone-secreting tissue. The amounts of œstrogen excreted by some of these patients after adrenalectomy are in the same range as has been found in apparently normal postmenopausal women (Brown 1955b); and perhaps the operation led to little change in environment.

It is well recognised that these patients, almost without exception, ultimately succumb to a recrudescence of their disease, however well they may have responded initially to endocrine therapy. It is problematical whether such a recrudescence results from some change in the tumour itself or from a hitherto undetected alteration in hormonal environment. Furthermore it is possible that the growth of mammary tumours may be influenced by endocrine factors that have not been considered in this study.

Summary

The excretion of three œstrogens, pregnanediol, 17-ketosteroids, and pituitary gonadotrophins has been studied in 13 patients who had previously undergone bilateral adrenalectomy and oöphorectomy for mammary carcinoma. The patients were classified into two clinical groups depending on their response to operation.

The pattern of hormone excretion in patients who responded favourably to the operations did not differ from that in patients who showed no improvement after removal of both adrenals and ovaries.

When an intravenous infusion of corticotrophin was given, none of the patients showed any response measurable by the assay methods used.

It is concluded that the small amounts of hormone excreted by these patients after operation were not derived from adrenocortical tissue.

The excretion of sex hormones by a postmenopausal patient before, during, and after bilateral adrenalectomy and oöphorectomy is described.

We are greatly indebted to the Melville Trust, whose generous financial support made this investigation possible, and we gratefully acknowledge the close collaboration of numerous colleagues and assistants.

REFERENCES

Bayliss, R. I. S., Steinbeck, A. W. (1954) *Brit. med. J.* i, 486.
Beatson, G. T. (1896) *Lancet*, ii, 104, 162.
Borth, R. (1952) *In* Wolstenholme, G. E. W., Cameron, M. P. Ciba Foundation Colloquia on Endocrinology. Steroid Metabolism and Estimation. London; vol. II, p. 45.
British Empire Cancer Campaign (1956) Report of Conference on Œstrogen Methodology—ed. G. F. Marrian—in preparation.
Brown, J. B. (1955a) *Biochem. J.* **60**, 185.
— (1955b) *Mem. Soc. Endocrinol.* **3**, 1.
Bulbrook, R. D., Greenwood, F. C., Williams, P. C. (1956) *J. Endocrin.* (in the press).
Dao, T. L-Y. (1953) *Science*, **118**, 21.
Falls, J. L. (1955) *Cancer*, **8**, 143.
Graham, L. S. (1953) *Ibid*, **6**, 149.
Greenwood, F. C., Bulbrook, R. D. (1956) *J. Endocrin.* **13**, 33P.
Haddow, A., Watkinson, J. M., Paterson, E., Koller, P. C. (1944) *Brit. med. J.* ii, 393.
Huggins, C., Bergenstal, D. M. (1952) *Cancer Res.* **12**, 134.
— Dao, T. L-Y. (1954) *Ann. Surg.* **140**, 497.
Jessiman, A. G., Moore, F. D. (1956) *New Engl. J. Med.* **254**, 846.
Klinefelter, H. F. jun., Albright, F., Griswold, G. C. (1943) *J. clin. Endocrin.* **3**, 529.
Klopper, A., Michie, E. A., Brown, J. B. (1955) *J. Endocrin.* **12**, 209.
— Strong, J. A., Cook, L. R. (1956). In the press.
Loeser, A. A. (1938) *Brit. med. J.* ii, 319.
Loraine, J. A., Brown, J. B. (1956) *J. clin. Endocrin.* **16**, 1180.
Luft, R., Olivecrona, H. (1953) *J. Neurosurg.* **10**, 301.
Marrian, G. F., Bauld, W. S. (1955) *Biochem. J.* **59**, 136.
— Loke, K. H., Watson, E. J. G., Panattoni, M. (1956) Personal communication.
Medical Research Council (1951) Report of Committee on Clinical Endocrinology, *Lancet*, ii, 585.
Segaloff, A., Gordon, D., Carabasi, R. A., Horwitt, B. N., Schlosser, J. V., Murison, P. J. (1954) *Cancer*, **7**, 758.
Smith, O. W., Emerson, K. jun. (1954) *Proc. Soc. exp. Biol., N.Y.* **85**, 264.

RECENT EVOLUTION AND SPREAD OF STRAINS OF INFLUENZA-A VIRUS

A. ISAACS
M.D. Glasg.

From the World Influenza Centre, National Institute for Medical Research, London

IT is generally accepted that influenza viruses, particularly influenza-A virus, show continual antigen c changes and that the occurrence of epidemics of influenza every two or three years is to a large extent due to the ability of these viruses to maintain antigenic novelty (e.g., Andrewes 1949, Van der Veen and Mulder 1950, Hilleman 1952, Magill and Jotz 1952). At first it was thought that the strains of any one epidemic were antigenically rather uniform but distinctly different from the strains of the previous epidemic. However, as a result of the study programme of the World Health Organisation it has been possible to compare strains isolated in different countries both during and between epidemics, and a more complex picture has emerged.

During the 1950–51 influenza-A epidemic, and again during the 1952–53 epidemic, most of the strains received at the World Influenza Centre belonged to one of two main antigenic groups, and evidence was presented that throughout the world one antigenic strain was being gradually superseded by another (Isaacs and Archetti 1954). Since 1954 this process seems to have continued, and in addition two new antigenic groups of influenza-A virus have been found.

Antigenic Relationships of Some Recent Strains of Influenza-A Virus

Most of the strains of influenza-A virus received at the World Influenza Centre in the 1950–51 epidemic belonged in about equal numbers to one of two antigenic groups. One group is typified by the A/England/1/51 strain recovered from Liverpool, and the strains of the second group, which were more heterogeneous, can be represented by A/Sweden/3/50 strain (Isaacs et al. 1952). For convenience the first group are called Liverpool strains and the second Scandinavian '50.

In the 1952–53 epidemic the strains again belonged to two groups. Most of them can be typified by A/England/1/53 strain, which is related to Scandinavian '50 strains although not identical with them; these are called Scandinavian '53 strains. The other group consisted of Liverpool strains identical with the A/England/1/51 strain of the previous epidemic (Isaacs et al. 1954).

There has not been any major epidemic of influenza A since 1953, but in the spring of 1955 we received antigenically distinct strains of virus from different parts of the world; these strains can be typified by A/Eire/17/55 and for convenience are called Eire '55 strains.

Finally, in the spring of this year, antigenically novel strains were isolated in widely separated countries; a typical member of this group is A/Nederland/36/56, and the group is called here Dutch '56 strains.

TABLE I—CROSS-HÆMAGGLUTINATION INHIBITION TESTS WITH 4 REPRESENTATIVE RECENT STRAINS OF INFLUENZA-A VIRUS

Virus	Serum			
	A/England/1/51	A/England/1/53	A/Eire/17/55	A/Nederland/36/56
A/England/1/51 ..	[960]	20	280	20
A/England/1/53 ..	15	[240]	50	30
A/Eire/17/55 ..	40	20	[160]	15
A/Nederland/36/56	<10	60	<10	[1920]

Sera were treated with trypsin to remove normal inhibitors of agglutination, absorbed with chick red cells, and titrated against 8 agglutinating doses of each virus.

The antigenic relationship of A/England/1/51, A/England/1/53, A/Eire/17/55, and A/Nederland/36/56 to one another, revealed by cross-hæmagglutination inhibition tests with ferret antisera, is shown in table I, which gives the result of a typical experiment. Table I shows that all four strains are, by this test, antigenically quite distinct from one another. However, it seems that A/Eire/17/55 is more closely related to A/England/1/51 than to the other strains, and that A/Nederland/36/56 is more closely related to A/England/1/53. In many tests with different members of these four groups the closer relationship of the Eire '55 strains to Liverpool strains, and of Dutch '56 to Scandinavian '53 strains, has been repeatedly confirmed.

Distribution of Four Antigenic Strains

Liverpool Strains.—As was suggested earlier, these strains have been gradually disappearing. We received only a single strain in 1955—from Portugal, where Liverpool strains had been present in 1953. No more strains have been received since.

Scandinavian '53 Strains.—Most of the strains received in the 1952–53 epidemic were Scandinavian '53 strains, and the same is true of most of the strains received in the 1953–54 and 1954–55 winters (northern hemisphere). This year we have again received a large number of these strains from England (many strains were received from the Central Public Health Laboratory, Colindale), Scotland, Finland, Germany, Iceland, Italy, Israel, and Japan. One of the strains from Holland was of this antigenic variety, and some strains isolated by Professor Gorbunova, of Moscow, in 1956, which we were very interested to receive from Russia, also appear to belong to this group.

Eire '55 Strains.—Strains of this group were isolated in the winter and spring of 1955 from England, Eire, India, and New York State, apparently in the space of three or four months. The widespread distribution of these strains in the spring of 1955 suggested that they might cause an influenza epidemic the following winter (i.e., last winter), but this did not happen. A few strains of this group were isolated last winter and spring from England again, Naples (Scandinavian '53 strains were isolated in Rome and Florence), India again, and South Africa, but nowhere does this strain seem to have caused widespread epidemics.

Dutch '56 Strains.—The first strains of this variety were isolated in February–March of this year in Holland. We received a strain from Prof. J. Mulder, of Leiden, who tells us that he has isolated many more of this antigenic variety, and we received five strains from Prof. J. Verlinde, of Leiden. In March Dr. D. W. Soman isolated two strains from Bombay, and in the same month Dr. I. G. K. Menon isolated one strain from Bombay and one from Coonoor in the south of India. In April Dr. F. P. Nagler isolated a strain from Charlottetown, Canada, and Dr. W. R. G. Thomas recovered five strains from Tanganyika. In May Prof. G. Henneberg sent us two strains which he had isolated in Berlin.* The small space of time in which these strains were recovered from places so far removed from each other was most unusual.

Possible Evolution of Recent Strains of Influenza-A Virus

The most plausible explanation for the constant antigenic changes in influenza viruses is that mutations are continually arising, and that, when a suitable antigenic change produces a strain which can persist

* Since this paper was submitted we have received two strains isolated by Dr. J. H. S. Gear from South Africa, and have confirmed the finding made by Dr. L. A. Hatch, of the Central Public Health Laboratory, Colindale, that two strains isolated in this country early in 1956 also belonged to this antigenic group.

TABLE II—POSSIBLE LINES OF EVOLUTION OF RECENT STRAINS OF INFLUENZA-A VIRUS

1st line	2nd line
Strains resembling CAM and FMI (1946–47)	Strains resembling A/Sweden/3/50 (1950–51) (Scandinavian '50)
↓	↓
Strains resembling A/England/1/51 (1950–54) (Liverpool)	Strains resembling A/England/1/53 (1952–56?) (Scandinavian '53)
↓	↓
Strains resembling A/Eire/17/55 (1955–56–?) (Eire '55)	Strains resembling A/Nederland/36/56 (1956–?) (Dutch '56)

and spread, the new strain will have an advantage over its predecessors in that it will encounter less immunity in the general population. However, the facts that two main varieties of virus A were present in the 1950–51 epidemic and in the 1952–53 epidemic, and that there are now two new antigenic varieties as well as a survivor from 1953, suggest that the strains of influenza-A virus may have been evolving along two parallel lines. This is represented diagrammatically in table II, which is intended as only a very rough representation of the course of events. Minor mutations are undoubtedly arising continually in these strains, and the table simplifies something which is certainly much more complex.

Mechanism of Wide Spread of New 1955 and 1956 Strains

There are two ways in which a new antigenic strain of virus could appear within a short space of time in widely separated countries. This would happen if mutations arose simultaneously, or almost simultaneously, in different places, provided that the antigenic changes were in a similar direction. Alternatively, mutation could arise on a single occasion and be followed by rapid spread of the new strain. Andrewes (1956) suggests that both mechanisms might operate at once—i.e., mutations might arise at the same time in different places, and in some cases a single mutation might arise and be followed by true spread of the new strain.

There is abundant evidence of the spread of a strain within a country, and there is also much evidence that antigenic mutations are common in influenza viruses. For instance, on several occasions we have received one or two strains which were antigenically distinguishable from the major varieties shown in table II but apparently could not cause major epidemics or spread far.

The problem of the new 1955 and 1956 strains can therefore be put in this way: how much of their wide spread should be attributed to simultaneous mutations and how much to true spread? We have no method of answering this question categorically; but, if our assumptions are correct, the circumstantial evidence points in the following direction:

Liverpool strains were first detected in 1950, but Eire '55 strains, which presumably evolved from them, did not appear until 1955, when they were detected in four different places in the space of three or four months.

Again, Scandinavian '53 strains have been widespread since 1952, yet Dutch '56 strains, which we assume to have stemmed from them, did not appear until 1956, when they were found in seven different countries within a few months.

The time relations in these two cases suggest that spread of virus is more likely to account for its widespread distribution, and that the mutations may have been very uncommon, perhaps arising on one occasion only.

If this is what happened, Eire '55 strains may have evolved first in India, the only place where there is evidence that Liverpool strains were recently present (although they were actually first detected in Eire). By the same reasoning it is likely that the Dutch '56 strains first evolved in Holland, where Scandinavian '53 viruses were recently present (one such strain was isolated in 1956).

This argument is based only on what seems to be a likely explanation for these two instances and for two previous instances of possible spread (Chu et al. 1950). At present, however, there is no known method which would establish beyond all possible doubt whether true spread of virus was occurring. Nevertheless the argument has some practical importance because, if true spread is involved, we are faced with an indication of the speed with which a new and virulent strain might be spread round the world by modern air-transport.

Prognosis

The usefulness of epidemiological studies is more generally recognised if the results can be used to predict future events, but the lack of success in predicting the behaviour of the Eire '55 strains has greatly inhibited further speculation. There is, however, one factor which may deserve to be taken into account. Many of the Eire '55 strains, like many of the Scandinavian 50 strains, had a low avidity for antibody (Q strains of Van der Veen and Mulder 1950). It has been suggested that strains of this kind have a particular arrangement of their antigenic components in the virus particle which may favour their survival in a partially immune environment (Isaacs et al. 1954). This arrangement of antigens may not allow a virus to spread widely in epidemic form, and this perhaps requires further study. Although it would be hazardous to predict, there is a definite possibility that Dutch '56 viruses may become the next dominant antigenic variety of influenza-A virus.

Summary

The widespread occurrence of two antigenically new strains of influenza-A virus is described, and their possible evolution from previous strains is discussed.

I wish to thank Dr. C. H. Andrewes, F.R.S., for many critical discussions of these themes, and the workers collaborating in the World Health Organisation's programme on influenza, who have sent us strains of virus and useful information.

REFERENCES

Andrewes, C. H. (1949) *Edinb. med. J.* **56**, 337.
— (1956) *Calif. Med.* **84**, 375.
Chu, C. M., Andrewes, C. H., Gledhill, A. W. (1950) *Bull. World Hlth Org.* **3**, 187.
Hilleman, M. R. (1952) *Fed. Proc.* **11**, 798.
Isaacs, A., Archetti, I. (1954) *Lancet*, ii, 457.
— Depoux, R., Fiset, P. (1954) *Bull. World Hlth Org.* **11**, 967.
— Gledhill, A. W., Andrewes, C. H. (1952) *Ibid*, **6**, 287.
Magill, T. P., Jotz, A. C. (1952) *J. Bact.* **64**, 619.
Van der Veen, J., Mulder, J. (1950) Studies on the antigenic composition of human influenza virus A strains with the aid of the haemagglutination-inhibition technique. Leiden.

MEGIMIDE IN THE TREATMENT OF BARBITURIC-ACID POISONING

ASGER LOUW
M.B. Copenhagen
SENIOR PSYCHIATRIST

LASS M. SONNE
M.D. Copenhagen
SENIOR PSYCHIATRIST

BISPEBJERG HOSPITAL, COPENHAGEN

FOR some years barbituric-acid poisoning has been treated according to physiological principles, by controlling shock, keeping the air-passages patent, and securing adequate oxygen-supply. This management has proved superior to stimulation therapy with drugs such as leptazol, 'Geastimol' (phthalic acid-bis-diethylamide), amphetamine, and picrotoxin. As "rousers" these drugs proved disappointing, since they shortened the period of coma only in fairly mild cases. Moreover, even moderate overdosage was apt to result in a spastic condition associated with elevation of blood-pressure and with hyperthermia.

"Conservative treatment" also has its problems. Shock, which commonly persists for a long time, may be controlled, but the patient needs careful and skilled supervision. A common, and often severe, complication

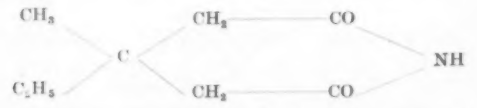
is impaired respiration, leading to atelectasis and pneumonia, and entailing accumulation of carbon dioxide which exerts a narcotic effect. But the most serious complications are respiratory paresis, against which hitherto no stimulant has proved effective, and renal failure involving anuria, which appears to be a more or less direct consequence of prolonged shock. Dialysis in an artificial kidney has tided a few patients over the anuria, but the mortality remains high. Accordingly, effective prophylaxis is of primary importance.

Shaw and Bentley (1952) investigated a large number of drugs supposed to counteract the depressant effect of morphine on respiration.

They mention, among others, 2,4-diamino-5-phenylthiazole (amiphenazole, 'Daptazole'), which was found to be specifically antagonistic to morphine and hyoscine, but in animals had no effect on barbituric-acid poisoning.

Shaw and Shulman (1955b) reported that in morphine poisoning amiphenazole stimulated respiration. At a meeting of the Danish Pharmacological Association (Feb. 6, 1956) Professor Shaw stated that this drug opposed also the euphoriant and the constipating effects of morphine. Unlike *n*-allylnormorphine (nalorphine), it does not appear to counteract its analgesic effect or to give rise to symptoms of abstinence in cases of habituation.

In 1954 Shaw et al. reported that amiphenazole had a slight antagonistic effect to barbiturates, but that a more pronounced effect was obtainable with β,β-methyl-ethyl-glutarimide ('Megimide,' bemegride), which has the formula :



Intraperitoneal injection of megimide 100 mg. per kg. body-weight into rats with barbituric-acid poisoning (pentobarbitone 60 mg. per kg.) reduced the sleeping-time by an average of half. In control rats which had received no pentobarbitone convulsions developed after administration of 15 mg. per kg., and the lethal dose was found to be 30 mg. per kg.

In dogs megimide dispelled the electro-encephalographic (E.E.G.) abnormalities induced by barbituric acid, but overdosage was reflected in spikes. Amiphenazole had a similar, but less pronounced, effect. Administration of the two drugs together, proved more effective than administration of either alone, enhancing the stimulating action on respiration and reducing the tendency to convulsions.

Shulman et al. (1955) reported on 41 cases of barbituric-acid poisoning, including 9 severe cases, treated as follows : amiphenazole 1 ml. from one syringe, followed immediately by megimide 10 ml. from a second syringe, was injected into the rubber tubing of a 5% glucose intravenous infusion, and this procedure was repeated every three to five minutes—for up to two hours where the patient was deeply comatose. Generally 200 ml. (1 mg.) megimide and 20 ml. (0·3 g.) amiphenazole brought the patient into a "safe state"—i.e., a state no more serious than light anæsthesia—and the patient usually woke up within one to eight hours, after an uneventful course.

These encouraging findings have been confirmed by Holten (1956), who obtained satisfactory results in 17 cases, mostly mild, treated by the method of Shulman et al. Holten suggests that megimide may have a specific antagonistic effect, by virtue of its chemical resemblance to barbituric acid.

Investigation

We have investigated the effect of megimide in barbituric-acid poisoning in the most severe cases admitted to the section for treatment of poisoning at Bispebjerg Hospital during the period between September and December, 1955.

TABLE I—CLINICAL CONDITION IN 24 CASES OF BARBITURIC-ACID POISONING

Condition	No. of cases*
Deep coma	23
Severe shock	19
Areflexia	20
Apnœa or severely impaired respiration	7
Coma + shock + areflexia	16

* Of the 24 patients, 7 died.

Material

The series comprises 24 patients : 9 males and 15 females. Their age-distribution (24–82) was as usual in such a series, the majority (14) being aged 30–49. 19 patients had pure barbituric-acid poisoning, whereas 5 had also taken other drugs (codeine, bromvaletone, phenacetin, alcohol).

This series is remarkable for the severity of the poisoning. This is evident from the patients' clinical condition (table I) and the blood-levels of barbituric acid (table II). The lowest blood-level was 3·1 mg. per 100 ml., and the three highest were 31, 33, and 34 mg. per 100 ml.

Treatment

Of the 24 patients, only 1 received combined megimide-amiphenazole therapy by intermittent injections as advocated by Shulman et al. (1955). Amiphenazole was administered only in 2 further cases, in which a strong stimulating effect on respiration was desired, and in 1 case when megimide was not available. The remainder were treated with megimide alone. The results, therefore, reflect almost exclusively the effect of megimide.

The drug was administered intravenously in portions of 500 mg. in 100 ml. physiological saline solution, not exceeding 1500 mg. at a time ; the solution was infused at the rate of about 1 drop per second. The total amounts of megimide administered to each patient were as follows :

375–1000 mg.	7 patients
1000–2000 mg.	11 ,,
2000–3000 mg.	2 ,,
3000–4000 mg.	4 ,,

14 patients had only one infusion ; of these 14, 10 did not need more and 4 died before a second infusion could be started. Of the remaining 10 patients, 4 had two infusions, 4 had three, and 2 had four.

The megimide portions were administered at intervals of a few hours to one day, depending on the need for further stimulation of the reflexes.

On arrival in the department all the patients had been given anti-shock treatment in the usual way with infusion of blood, 'Intradex' (a colloid carbohydrate preparation), or reconstituted dried serum.

Results

Table III summarises the effects of treatment with megimide.

TABLE II—BLOOD-LEVEL OF BARBITURIC ACID IN 24 CASES OF POISONING

Blood-level of barbituric acid (mg. per 100 ml.)	No. of cases	Cause of poisoning
<5	2	'Allypropymal' *
5–10	7	Allypropymal, 3 ; barbitone, 2 ; phenobarbitone, 1 ; amylobarbitone, 1
10–15	6	Allypropymal, 4 ; amylobarbitone, 2
>15	9	Barbitone, 5 ; phenobarbitone, 2 ; amylobarbitone, 1 ; unknown, 1

* Allyl-isopropylbarbituric acid.

Reflex Activity

The restoration of reflexes was the most striking clinical effect. The reflexes tended to become hyperactive; stroking the soles elicited a withdrawal reflex, and the patellar reflexes were accompanied by clonic twitches of the adductor muscles. This state resembled somewhat the hyperreflexia in tetanus poisoning, but there was no constant increase in tonus.

Respiration

In 6 of the 7 patients who had apnœa or impaired respiration with cyanosis at the start of treatment, respiration improved rapidly. In 3 apnœa was terminated during the infusion of megimide (an effect subsequently observed in 4 cases not included in the present series). This effect is particularly striking, since we had not previously re-established arrested respiration by means of any drug. Improved respiration was observed in 5 further cases.

"Safe State"

This signifies a state of stable anæsthesia undisturbed by signs of shock. When patients had reached this state the supply of fluid was restricted to 5% glucose solution with 500 ml. of intradex or 500 ml. of blood in the twenty-four hours as supportive measures. It is very difficult to decide to what extent stabilisation in the "safe state" effect can be ascribed to megimide, since the simultaneous anti-shock therapy usually leads to this state; but we estimate that achievement of the "safe state" was related to the infusion of megimide in 11 patients, 7 of whom were in deep shock before treatment.

TABLE III—EFFECTS OF TREATMENT WITH MEGIMIDE IN 24 CASES

Effect	No. of cases
Reflex activity induced or increased	19
Respiration stimulated	11
"Safe state" attained	11
Reduced depth of coma	8
Relapse after improvement	4
Reversal of E.E.G. changes	13*

* 13 cases studied.

Coma

Reduced depth of coma, judged by clinical criteria, such as spontaneous movements, response to pain and suction of mucus from the trachea, and the reappearance of cough and swallowing reflexes, followed administration of megimide in only 8 cases; but in 3 this "rousing effect" was particularly striking. Before treatment, their barbituric-acid levels had been 31 mg. (barbitone), 22 mg. (barbitone), and 12·5 mg. (amylobarbitone) per 100 ml.

The first 2 reacted towards the end of the first infusion after receiving 1500 and 375 mg. megimide. The reactions were repeated movements of swallowing, attempts to spit the tongue depressor out, lifting the eyelids upon being addressed, and averting the face on exposure to a strong light.

The 3rd patient, a 42-year-old woman, after infusion of 2250 mg. megimide sat up in bed and asked for a bedpan; yet at that time the blood-level of barbituric acid was 12·5 mg. per 100 ml. Three or four hours later she was mentally more remote, and the next morning she was comatose and areflexic, with a blood-barbituric-acid level of 16·0 mg. per 100 ml. A further 1000 mg. megimide was administered, and ten hours later the patient woke up.

In this 3rd case there was clinical regression in a phase during which the narcotic effect of the poison, owing to increased absorption, exceeded the presumed antidotal effect of megimide.

Does megimide shorten the period of coma besides reducing its depth?

In cases of poisoning by sodium pentobarbitone, Shaw (1955) found that, regardless of the severity of poisoning, the patients woke up six to eight hours after reaching the safe state. This was confirmed by Holten (1956). This observation, if substantiated, is weighty evidence that megimide is an antagonistic drug.

TABLE IV—BLOOD-BARBITURIC-ACID LEVELS AND DURATION OF COMA IN 12 CASES

Case no.	Poison	Blood-barbituric-acid level (mg. per 100 ml.)		Duration of coma (hr.) after 1st infusion of megimide
		Before treatment	On waking	
1	Allypropymal	4·4	4·0	17½
2	,,	8·2	4·3	72
3	,,	10·9	4·9	50
4	,,	11·3	3·0	132
5	,,	11·8	5·2–3·8	82
6	,,	13·9	6·6–4·2	83
7	Phenobarbitone	7·5	2·9–1·9	51½
8	,,	18·0	9·2	80½
9	Barbitone	22·0	14·5	40
10	Barbitone + hexobarbitone	31·0	16·0	6¾
11	Barbitone + allyl-isopropyl barbituric acid	19·0	17–16	60¾
12	Allobarbitone	9·6	6·4–3·5	27

The comatose period can be shortened only if the patient wakes up at a higher blood-barbituric-acid level or if the barbituric acid is more rapidly eliminated from the blood. Table IV shows the period of coma and the blood-barbituric-acid levels before treatment and on wakening in 12 cases.

This table shows that the 6 patients poisoned with allypropymal woke up at barbituric-acid levels of 3–6 mg. per 100 ml., and that in the 2 cases of phenobarbitone poisoning the level on waking was below 10 mg. per 100 ml. This accords with the values found by Lous (1954a) in patients waking up after anti-shock therapy. For allypropymal he reports a range on waking of 1·6–5·4 mg. per 100 ml. and for phenobarbitone 5–10 mg. per 100 ml.

In the 3 patients who had taken barbitone the blood-levels on waking were high (15–16 mg. per 100 ml.) and 1 of Lous's (1954a) patients also awoke at 15 mg. per 100 ml. In the case of allobarbitone poisoning the value on waking is not definitely outside the range reported by Lous for this drug (1·6–5·4 mg. per 100 ml.).

Apart from the woman who woke up for a short time, our material does not support the belief that patients treated with megimide wake up with a higher blood-level of barbituric acid than those who are not so treated.

As to the *duration of coma* table IV shows that, except in 2 cases, this ranged from one to five days after megimide was started. According to Shaw, patients wake up six to eight hours after reaching the "safe state." Of the present 12 patients, 6 reached the safe state during the treatment; but only 1 (case 10)

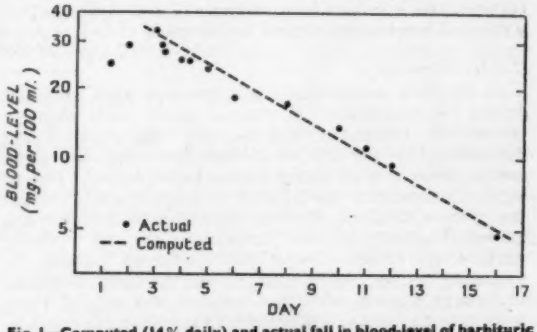


Fig. 1—Computed (14% daily) and actual fall in blood-level of barbituric acid in patient who had ingested barbitone.

woke up within this period, whereas the others remained comatose for from forty hours to a hundred and thirty-two hours (case 4). Case 4 was without spontaneous respiration for about twenty hours; he had to have assisted ventilation, and widespread atelectases developed in both lungs. Case 5 had widespread cancer with skeletal metastases. In these 2 cases cerebral anoxia may have prolonged the period of coma.

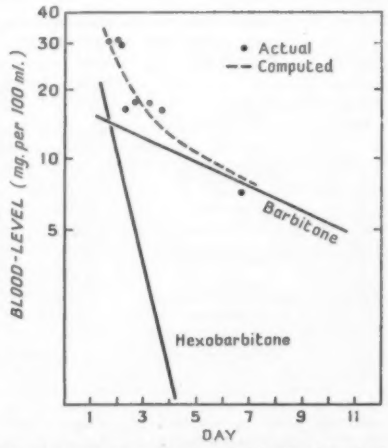


Fig. 2—Computed and actual fall in blood-level of barbituric acid in patient who had ingested 12,500 mg. barbitone plus 10,000 mg. hexobarbitone. Computed fall obtained by addition from two straight lines representing daily fall of 10% for barbitone and 67% for hexobarbitone.

Accordingly, it seems that in severe cases the coma must be expected to last for one to three days after the institution of treatment, with or without megimide.

Rate of Elimination

The rate of elimination of barbituric acid during megimide therapy was studied in 2 cases; the values are plotted logarithmically in figs. 1 and 2. The rate of fall in the blood-level is of the same magnitude as with anti-shock therapy without megimide. This applies whether the patient has ingested only a drug which is slowly eliminated (fig. 1) or a combination of a drug that is rapidly eliminated and one that is slowly eliminated (fig. 2).

Relapses

Relapse after megimide had induced improvement was noted in only 4 of the 24 cases. In 2 megimide possibly exerted a transitory effect on respiration and reflex activity. The 3rd patient was the woman, already mentioned, who woke up and then after three to four hours went back into coma. The 4th patient had phenobarbitone poisoning; for three days he had been receiving megimide (500 + 1000 + 500 + 500 mg.), which raised reflex activity so much that several times he was on the threshold of convulsions. His condition could not be stabilised; the coma remained unaffected; between the infusions he was areflexic; and he died in a state of respiratory paresis and uræmia.

E.E.G. Findings

In 13 cases continuous E.E.G. tracings were obtained during the treatment. All showed severe E.E.G. changes before the treatment was started, the curve being dominated by periods of "blackouts"—in the most serious cases as if all activity were extinguished. One to eight minutes after the infusion of megimide was started the picture changed, showing synchronous activity and increased amplitude with paroxysmal features. During continuous infusion there was continued increase in frequency as well as amplitude, and as early as fifteen to twenty minutes after the infusion was started there were in some cases spikes, gradually increasing in number. This feature was recorded in 10 cases, in some of which spikes appeared before any clinical effect was detectable. (Shaw also reports spikes in the E.E.G., regarding them as a sign of overstimulation.) We continued the infusion of megimide, not interrupting it until the paroxysmal tendency became pronounced.

Complications

Shaw has pointed out the risk of inducing vomiting and convulsions by overdosage. We observed mild, short-lived attacks of tonic-clonic convulsions in 3 cases. 3 further patients passed into a state of increased irritability with muscular trembling, hyperactive irradiating reflexes, and myoclonic twitching on touch. In all cases these signs subsided spontaneously in a few hours without administration of anti-epileptics. But increased reactivity complicated the work of the anæsthetists in performing tracheal toilet. Vomiting occurred in only 1 case, in which it resulted in aspiration and widespread pulmonary changes.

Of the 24 patients, 6 developed psychic disturbances of a sort that we are not used to seeing in patients waking up from barbituric-acid poisoning. They exhibited threatened or fully developed psychosis, characterised by mood swings (pronounced lability or euphoria), sense of unreality, confusion, and visual hallucinations. These signs appeared one to three days after the patients had regained consciousness and subsided in one to two days, spontaneously in 5 cases, and with the help of chlorpromazine in 1.

Conclusions

Megimide has a striking stimulating effect on reflex activity as well as on respiration; and it is valuable for bringing patients into a stabilised physiological state. On the other hand, in the present series of severe cases this drug did not influence the rate at which barbituric acid was eliminated, the blood-level of barbituric acid on waking, or the duration of coma.

These observations do not justify firm conclusions regarding the mode of action of megimide; but our experience does not support the hypothesis that it is an antagonist in a strictly biochemical sense (like, for example, nalorphine in morphine poisoning). It seems that the drug counteracts barbituric acid by a central stimulant action. In our opinion, this is indicated by the reflex hyperactivity, the E.E.G. changes, and the complications caused by overdosage (mild convulsive state and mental disturbances reminiscent of psychoses experimentally induced by hallucinogenic substances). These complications are not readily compatible with the assumption of a simple biochemical antagonistic effect—e.g., competitive inhibition.

In barbituric-acid poisoning narcosis is known to be due to inhibition of the respiratory processes which lead to the formation of adenosine triphosphoric acid, necessary for acetylcholine synthesis. It would, therefore, seem reasonable to seek the answer to the question whether megimide is an antagonist in the strict sense of the word in studies on its effect on the formation of adenosine triphosphoric acid in the nerve-cell.

Possibly the drug has both effects: it may be an antidote as well as a cerebral stimulant. As a stimulant it has novel features. It does not raise the blood-pressure or induce hyperpyrexia as do analeptics, and it does not seem to provoke increased oxygen consumption by the cerebral tissue. Accordingly it can be regarded as a valuable supplement to other remedies for poisoning by narcotic drugs.

Summary

In cases of severe barbituric-acid poisoning, administration of 'Megimide' (bemegride) helped to bring about a safe state by stimulating reflex activity and respiration.

Megimide induced electro-encephalographic changes, including patterns of universal cortical stimulation, in some cases with spikes which appeared before any clinical effect was manifest.

Megimide did not apparently shorten the period of coma, hasten elimination of barbituric acid, or cause patients to recover consciousness before the blood-level of barbituric acid had fallen to that at which return of consciousness would have been expected without megimide.

BIBLIOGRAPHY

Holten, C. (1956) *Ugeskr. Læg.* **118**, 72.
Lous, P. (1954a) *Acta pharm. tox., Kbh.* **10**, 261.
— (1954b) Kvantitative kemiske Barbitursyrestudier hos Mennesker. Copenhagen.
Shaw, F. H. (1955) *Lancet*, i, 969.
— Bentley, G. A. (1952) *Nature, Lond.* **169**, 712.
— — (1955) *Aust. J. exp. Biol. med. Sci.* **33**, 143.
— McCallum, N. E. W. (1955) *Lancet*, i, 1225.
— Shulman, A. (1955a) *Nature, Lond.* **175**, 388.
— — (1955b) *Brit. med. J.* i, 1367.
— Simon, S. E., Cass, N. M., Shulman, A., Anstree, J. R., Nelson, E. R. (1954) *Nature, Lond.* **174**, 402.
Shulman, A., Shaw, F. H., Cass, N. M., Whyte, H. M. (1955) *Brit. med. J.* i, 1238.

AROUSING EFFECT OF MEGIMIDE AND AMIPHENAZOLE IN ALLYPROPYMAL POISONING

JEPPE PEDERSEN
M.B. Copenhagen

SENIOR PSYCHIATRIST, BISPEBJERG HOSPITAL, COPENHAGEN

CLINICALLY it seemed that patients with barbituric-acid poisoning who were treated with megimide and amiphenazole did not regain consciousness earlier, in relation to the blood-level of barbituric acid, than patients who were not so treated, and that these drugs did not hasten elimination of barbituric acid.

To elucidate these points 22 cases of 'Allypropymal' poisoning treated with these drugs (megimide alone in 9, and megimide plus amiphenazole in 13) were compared with 74 cases of allypropymal poisoning not so treated.

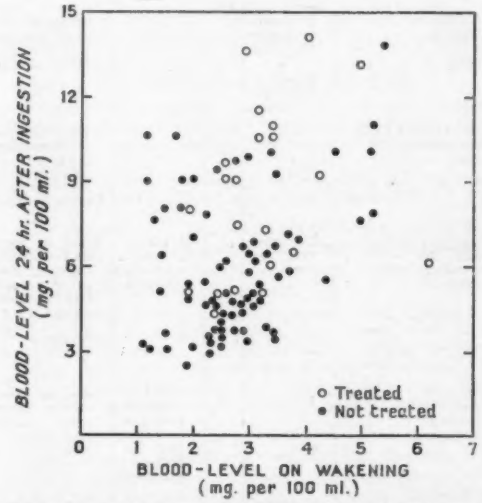


Fig. 1—96 cases of allypropymal poisoning (22 treated with megimide and amiphenazole, 74 untreated): period from ingestion to wakening related to blood-levels of allypropymal twenty-four hours after ingestion.

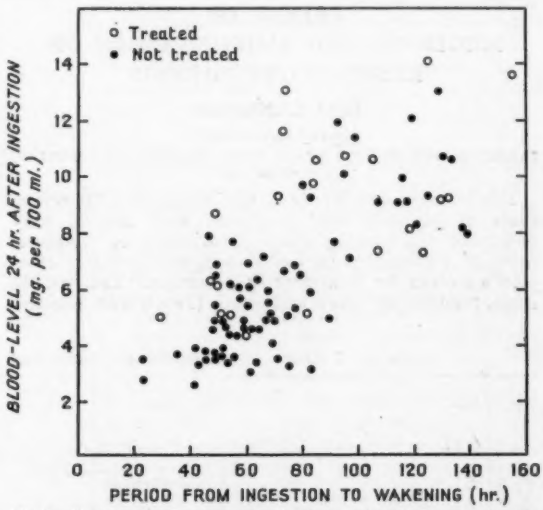


Fig. 2—96 cases of allypropymal poisoning: blood-level on wakening related to blood-level twenty-four hours after ingestion.

Allypropymal (allyl-isopropylbarbituric acid) is widely used in Denmark as a hypnotic. More than half of all cases of poisoning by hypnotics that are admitted to hospital are due to allypropymal. The usual dose is 100–200 mg.; and the drug is eliminated fairly quickly. According to Lous (1954) allypropymal 100 mg. per kg. body-weight results in a blood-level of 12–14 mg. per 100 ml. at the end of twenty-four hours.

The duration of unconsciousness and the serum level of barbituric acid on wakening were compared in the two groups.

The 74 control cases were from the period before May, 1955; the 22 treated cases were seen between September, 1955, and April, 1956. Apart from the administration of megimide and amiphenazole, treatment was the same in the two groups.

Deep coma and absent reflexes constituted the main indications for treatment with megimide and amiphenazole, which were administered by intravenous infusion (Clemmesen 1956). In almost all cases the immediate rousing effect was good; usually within twenty to thirty minutes the patients reacted to strong stimuli, and the reflexes reappeared and in many cases became hyperactive; but in most cases the patient lapsed into coma after the first infusion and a further infusion had to be given. The largest dose of megimide was 3500 mg., and of megimide and amiphenazole together 7000 mg. and 1500 mg.

Figs. 1 and 2 show the duration of unconsciousness and the blood-level on wakening in patients treated with antidote and in patients not treated with antidote. For both factors the distribution in the two groups is about the same.

Summary

In 22 cases of poisoning by a barbituric-acid derivative ('Allypropymal') megimide and amiphenazole exerted an undoubted arousing effect; but comparison with 74 control cases of poisoning by the same derivative which were not treated with those substances indicates that the two drugs did not curtail the period of unconsciousness or restore consciousness at higher blood-levels of barbituric acid than in the controls.

REFERENCES

Clemmesen, C. (1956) *Lancet*, ii, 966.
Lous, P. (1954) *Acta pharm. tox., Kbh.* **10**, 261.

EFFECT OF MEGIMIDE AND AMIPHENAZOLE ON RESPIRATORY PARESIS

CARL CLEMMESEN
M.D. Copenhagen
DIRECTOR, PSYCHIATRIC DEPARTMENT, BISPEBJERG HOSPITAL, COPENHAGEN

BETWEEN September, 1955, and April, 1956, 70 serious cases of barbituric-acid poisoning were treated with megimide (β, β-methyl-ethyl-glutarimide) or amiphenazole (2, 4-diamino-5-phenylthiazole) in Bispebjerg Hospital's section for treatment of poisoning. The first 24 cases, reported by Louw and Sonne (1956), were selected from among the most severe admitted to the section. The last 46 cases include all definite cases of barbituric-acid poisoning associated with unconsciousness and areflexia or greatly diminished reflexes.

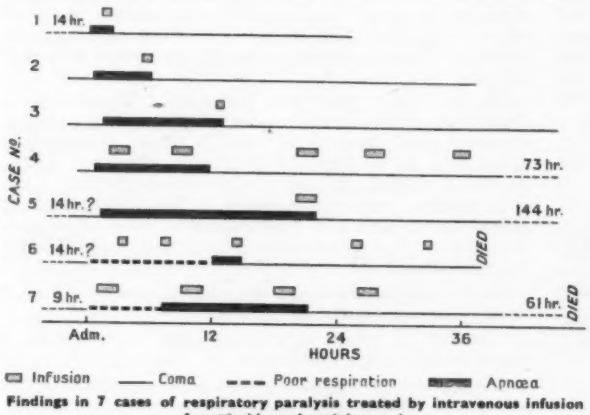
Method

The drugs were administered in an intravenous drip, comprising 100 ml. physiological-saline solution containing 500 mg. megimide to which was added 10 ml. containing 150 mg. amiphenazole. The drip was administered at a rate of about 100 ml. in thirty minutes. This infusion, administered parallel with the usual treatment (Clemmesen 1954), was continued until 300 ml. megimide and 30 mg. amiphenazole had been administered; but it was interrupted when distinct reflexes were elicited, or in the

DATA ON 7 CASES OF RESPIRATORY PARALYSIS TREATED WITH MEGIMIDE AND AMIPHENAZOLE

Case no.	Sex	Age (yr)	Drug	Dose	Duration of unconsciousness (hr.)		Stay in dept. (days)	Condition on and after adm.	Treatment		Blood-level of barbit. acid (mg. per 100 ml.)		Convulsions	Confusion + hallucs. (days)	Other disorders	Course
					Before adm.	In hosp.			Infusion	Effect	Max.	On waking				
1	F	58	'Allypropymal'*	5 g.	14	25	3	Deep shock; imperceptible, pulse, B.P., and resp. in first 100 min.	After 90 min. megimide 100 ml. for 25 min. + corresp. dose of amiphenazole	After 25 ml. pulse +, B.P. +, resp. +	8·5	6·2	Clonic twitchings	3–4	..	No compl. Discharged after 28 days
2	M	43	'Idobutal (RT)'† +alcohol	6 g.	1½	30	2	Deep shock; B.P. 70/50; Hb 125%; apnœa after 40 min.	After 6 hr. megimide 250 ml. interrupted because of incipient convulsions	During infusion resp. +	6·0	3·6	3rd day, one	4	Abuse of drugs and alcohol	No compl. Discharged after 14 days
3	F	41	"Sleeping drops"	½ bott.	1½	45	3	Deep shock; B.P. 75/50; apnœa after 90 min.	After 12½ hr. megimide 100 ml. for 45 min. + corresp. dose of amiphenazole	After 15 min. resp. +	18·0	9·7	Two or three generalised during and 3 hr. after infusion	..	..	No compl. Discharged after 27 days
4	F	54	Allypropymal	10 g.	½	73	9	Deep shock; B.P. 70/30; apnœa after 20 min., lasting 11 hr.	Megimide 300 + 300 + 300 + 300 + 190 ml. + corresp. dose of amiphenazole	1½ hr. after 2nd infusion resp. +	17·0	3·2	Eight generalised during and 5 hr. after infusion	4–5	..	Large pneumonic lesions pulm. œdema. Discharged after 33 days
5	F	42	Allypropymal	9 g.	14 ?	151	9	Deep shock; B.P. 70/? temp. 30·3° C; apnœa after 95 min., lasting 21 hr.	After 21 hr. megimide 200 ml.	During infusion resp. +	13·1	2·7	..	..	..	Pulm. collapse tracheotomy, bronchopneumonia. Discharged after 18 days
6	F	61	Allypropymal + barbitone	4 g. 4 g.	14 ?	37	2	Deep shock; imperceptible pulse and B.P.; temp. 20° C; insuff. resp. for 12 hr., then apnœa for 3 hr.	Megimide 100 + 75 + 75 + 125 + 200 ml. + corresp. dose of amiphenazole	During 3rd infusion resp. +	17·0	..	Five during infusions		Nephrosclerosis, chronic uræmia	Died in renal and cardiac failure. Necropsy: nephrosclerosis, coronary arteriosclerosis
7	F	76	Phenobarbitone	?	9	62	3	Deep shock; B.P. 90/80; Hb 120%; temp. 29° C; insuff. resp. for 7½ hr., then apnœa for 14 hr.	Megimide 300 + 300 + 300 + 300 ml. + corresp. dose of amiphenazole	2 hr. after 2nd infusion resp. +	29·0	..	..	..	Senile changes; severe coronary arteriosclerosis	Died in circulatory failure with anuria and bronchopneumonia. Necropsy: coronary arteriosclerosis; kidneys damaged by shock

* Allyl-isopropylbarbituric acid. † n-Butyl-allyl-barbituric acid.



Findings in 7 cases of respiratory paralysis treated by intravenous infusion of megimide and amiphenazole.

event of muscular twitching, vomiting, or incipient convulsions. If, at the end of a few hours, the reflex activity was again diminished or remained diminished, infusion of the drugs was resumed.

Results

The 70 cases included 7 of respiratory paralysis with total apnœa due to barbituric-acid poisoning (see table and figure). In each of these 7 cases the paresis was abolished and respiration permanently restored to normal during or shortly after the administration of megimide and amiphenazole.

The accompanying table shows that on admission each of these 7 patients was in deep shock and that total apnœa soon developed in the first 5. In the last 2 cases apnœa followed six to twelve hours of respiratory insufficiency. In the earlier cases treatment was started late. This was partly because at first we were not aware of the specific effect of these drugs on respiration.

In case 2 electro-encephalographic examination was awaited.

In case 3 there had been no areflexia, the poison was unknown, and nalorphine was ineffective.

In case 5 our supply of megimide had been exhausted because of difficulties of delivery; its effect, when at last it arrived, was prompt, although the apnœa had lasted for twenty-one hours.

In cases 1, 2, 3, and 5 100–250 ml. proved sufficient, whereas in cases 4 and 6 doses as high as 600–900 ml. were only tardily effective.

Cases 1–5 recovered, but cases 6 and 7 died.

In case 6 the prognosis was bad from the start, because of chronic uræmia which had involved seventeen hospital admissions; in this case each infusion of megimide induced convulsions.

Case 7 also had a hopeless prognosis. The patient, aged 76, had ingested an enormous dose of phenobarbitone.

The table shows that as a rule patients treated in this way do not regain consciousness until the blood-level of barbituric acid has dropped to the same value as in patients who are not so treated.

In addition to the 7 cases reported here, megimide and amiphenazole were administered in 2 cases with terminal respiratory paralysis; the respiration was improved, but the patients died. In a case poisoned with 'Apromal' (allyl-isopropyl-acetylcarbamide) no effect was observed; but this preparation is a carbamide and not a barbituric acid.

Complications

Cases 1–4 developed convulsions, but in case 1 these consisted only in clonic twitchings of the arms. Case 4 had received not less than 1390 ml. The single convulsion in case 2 at the end of three days was possibly due to abstinence, but case 3 shows that even a small dose may induce a convulsion.

Cases 1, 2, and 4 had episodes of severe mental confusion with hallucinations a few days after treatment.

These complications are not so severe as to contra-indicate the use of these drugs in total respiratory paralysis.

Conclusion

Hitherto, total respiratory paralysis has been regarded as an extremely serious complication of barbituric-acid poisoning. Analeptics are ineffective and as a rule death ensued. Of 19 deaths from barbituric-acid poisoning treated in this unit in 1951, 5 followed total respiratory paralysis.

If only because of their effect on respiratory paralysis megimide and amiphenazole are valuable adjuvants in the treatment of acute barbituric-acid poisoning.

Summary

70 cases of severe barbituric-acid poisoning included 7 with respiratory paralysis.

Each of these 7 cases responded to brief treatment with megimide and amiphenazole.

REFERENCE

Clemmesen, C. (1954) *Acta med. scand.* **148**, 83.
Louw, A., Sonne, L. M. (1956) *Lancet*, ii, 961.

DELIRIOUS PSYCHOSIS AND CONVULSIONS DUE TO MEGIMIDE

J. KJÆR-LARSEN
M.B. Copenhagen
JUNIOR PSYCHIATRIST, BISPEBJERG HOSPITAL, COPENHAGEN

So far no report on megimide in the treatment of barbituric-acid poisoning has mentioned psychic disturbances after wakening. In this department among the first 50 patients with acute barbituric-acid poisoning who were treated with megimide, return of consciousness was followed by psychosis in 15. Among the same 50 patients, the administration of megimide caused immediate convulsions in 16.

Material and Methods

All 50 patients had been admitted after attempted suicide. Table I shows that situational reactions and psychogenic depressions predominated among the psychiatric diagnoses.

Of the 50 patients, 32 received amiphenazole in addition to megimide. The indications for the treatment were those suggested by Shaw (1955). The technique has been described by Clemmesen (1956).

Psychoses

Of the 15 cases of psychosis, 6 arose among the 18 patients treated with megimide alone, and 9 among the

TABLE I—DISTRIBUTION OF 50 PATIENTS TREATED WITH MEGIMIDE ACCORDING TO PSYCHIATRIC DIAGNOSES AND SEX, AND TO PSYCHOSES AFTER WAKENING

Diagnosis	Total	Psychoses
Situational reaction	19	5
Psychogenic depression	19	6
Endogenous depression	5	2
Psychopathy	5	1
Schizophrenia	2	1
Total	50	15
Males	17	4
Females	33	11

32 who received also amiphenazole. The psychoses did not differ between these two groups, and amiphenazole did not seem to contribute to their appearance. The psychotic reactions were uniformly distributed between the diagnostic groups (table I) and occurred with equal frequency in the two sexes. Most of the patients were aged 30–60, and there is no evidence that the patients differed in susceptibility to psychotic reaction according to their ages.

ILLUSTRATIVE CASE-REPORTS

Case 1.—A 36-year-old housewife who had previously been cheerful, vivacious, and extrovert. Her husband had a gastric ulcer and had become irritable; their housing conditions were unsatisfactory; and in the past few years the patient had become unbalanced and sleepless. For at least a year she had taken 'Allypropymal' (allyl-isopropylbarbituric acid), 0·3–0·5 g. every night. At a family party a relative slapped her face; slightly inebriated, she went home and took 9·0 g. of allypropymal. (The ordinary therapeutic dose of allypropymal is 0·1–0·2 g.) She was soon found and sent to hospital, where she lay unconscious for seventy hours during which she received altogether 5 g. megimide.

After waking up, she at once went into a psychotic phase. In the first days she was tense and anxious, and later exalted; she did not sleep for ninety-six hours; she was agitated, but lay quiet in bed and was compliant. She talked sensibly about her attempt at suicide and the preceding quarrel and could for a short time be engaged in ordinary conversation; but her attention fluctuated and her orientation was deficient. She put her pillow to her breast to nurse one of the small Arabic babies she thought she had in her bed. She talked about black flakes in the air and smoke in the room. She "saw" coloured, flickering, symmetrical patterns, "saw" her son tethered to a tree on the lawn, "saw" the doctors in richly coloured hunting outfit on horseback in the garden. For a time, everything was green. There were threatening male voices floating in space, and the patient had a vague feeling of being pursued. For some time she felt as if her body was shrinking, and she presumed that this was so that she could better be put in a coffin.

After six days, she recovered rapidly in the course of about twenty-four hours. She remembered her psychotic experience. Ever since, she has been in her habitual state.

To sum up this was a case of delirious psychosis predominated by visual hallucinations after treatment with a large dose (5 g.) of megimide.

Case 2.—A 54-year-old man with manic-depressive psychosis who had previously been admitted eight times to the department, once after attempted suicide with allypropymal. On waking up from that attempt the patient had exhibited only depression. His consumption of barbiturates was 0·3–0·4 g. allypropymal at night and 0·2 g. amylobarbitone in the daytime. He again attempted suicide with allypropymal.

This time he was treated with 1·5 g. megimide, which induced convulsions. During the first forty-eight hours after wakening he showed only his usual depression, but after this free interval his consciousness was impaired for three days; he was restless and distinctly hallucinated, complaining of black specks before his eyes and later stating that it was raining through the roof. The temperature rose from 37 to 38·5°C and the pulse-rate to 125. He was anxious and entirely sleepless. After having received chlorpromazine 300 mg. in three doses of 100 mg., he slept for twelve hours on end and thereafter again presented a purely depressive state, remembering as a nightmare "how voices and colours jumped about in the air."

To sum up this was a case of delirious psychosis in a manic-depressive man developing two days after he woke up from barbiturate poisoning treated with a moderate dose (1·5 g.) of megimide.

CLINICAL FEATURES

These psychoses were notably uniform. Their onset was from the first to the fourth day after wakening. Visual experiences predominated, in the form often of "black specks," smoke, or fire, and in several cases of coloured patterns. Genuine visual hallucinations were often vividly described. Colour experiences were common. Auditory hallucinations did occur, but were less outstanding.

On the whole, there was pronounced impairment of consciousness, manifesting itself in, among other things, deficient orientation as to time or place, whereas the orientation as to personal data was invariably intact. Attention fluctuated, and it was difficult to keep up a conversation with the patients. The impairment of consciousness and the hallucinations were most pronounced at night. Confabulations and suggestibility were common.

In 12 patients the mood was characterised by fear or anxiety, in 3 by unstable euphoria.

Inability to sleep for several days occurred in 8 patients, and motor unrest in 9.

During the psychoses the emotional reactions to the attempted suicide and previous conflicts appeared to be adequate.

Only 2 patients had amnesia as to the attempted suicide, which in both instances had been carried out in a state of severe inebriation; but when told about their action the patients accepted the statement as a fact.

Some of the experiences during the psychotic state "conformed" to the preceding suicidal thoughts. Thus, ideas of death, coffins, corpses, and sepulchral monuments appeared to occur in hallucinatory form, but frequently in connection with some other person.

None of the patients had amnesia as to the psychotic experiences, but in some cases these were remembered "as a dream."

Severe tremor occurred in only a few cases. Many patients had low-grade pyrexia, but it is difficult to assess this item because of the preceding poisoning, which in many cases was associated with pyrexia.

Paranoid symptoms were outstanding only in 1 case and were vague and transitory in 4.

The psychotic states persisted for two to six days, and most patients received no medication.

MECHANISM

These psychoses bore the stamp of exogenous reactions. They set in from the first to the fourth day after wakening; the latent period was short after large doses of megimide and long after small doses (fig. 1).

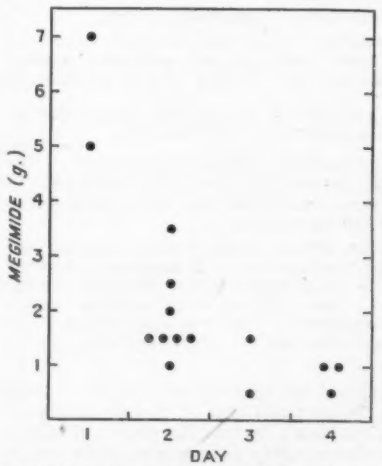


Fig. 1—Day of onset of psychosis after wakening and dose of megimide (15 cases).

Fig. 2 shows the dose of megimide related to the duration of unconsciousness after admission in the 50 cases treated with megimide. The frequency of psychosis was higher after large than after small doses of megimide. Moreover, psychosis developed mainly in

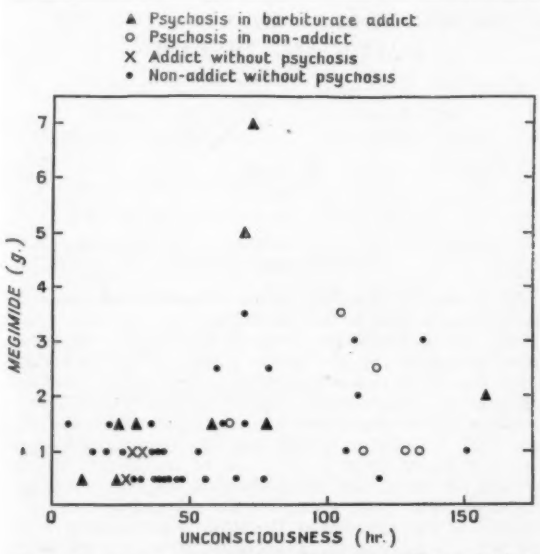


Fig. 2—Duration of unconsciousness related to dose of megimide in 50 cases (psychosis in 15 cases).

drug addicts and in non-addicts with a long period of unconsciousness.

"Hallucinogenic" Effect?

These psychoses resembled intoxications due to mescaline and lysergic acid, but differed in being always interpreted as unequivocal reality.

Megimide was started a few hours after admission. After megimide was discontinued, there would often be four days before the patient awoke and then another few days before the psychosis set in. There was no special tendency for patients waking up soon after the administration of megimide to develop psychosis. These facts are not easily compatible with the assumption of a direct "hallucinogenic" effect; and indeed, this would not explain why the psychoses were most apt to affect barbiturate addicts.

Provoked "Withdrawal" Psychosis?

The symptoms accorded well with those of spontaneous withdrawal psychoses, but uniform exogenous reactions may be of extremely different ætiology.

Of the 50 patients 12 were barbituric-acid addicts according to the criterion of Wulff (1955): a regular consumption obviously exceeding ordinary therapeutic doses. Allypropymal 0·4–0·5 g. daily was most common.

Among these 12 barbituric-acid addicts 9 developed psychosis. Of 38 non-addicts psychoses occurred in only 6, all of whom had been taking barbituric acid in therapeutic doses.

The difference in the incidence of psychoses between addicts and non-addicts is not due to a difference in the dose of megimide.

The serum level of barbituric acid at onset of psychosis was usually below 3 mg. per 100 ml. in the case of rapidly eliminated drugs and below 4 mg. per 100 ml. in the case of slowly eliminated agents. In most cases the values were considerably lower. In 1 patient, however, the psychosis set in at a phenobarbitone level of 6 mg. per 100 ml., and in another case at a barbitone level of 7·8 mg. per 100 ml.

Rate of elimination.—Table II shows that the incidence of psychosis did not vary with the rate of elimination of the different barbiturates; this applies to addicts as well as to non-addicts. In contradistinction, Wulff (1955) found no withdrawal psychoses among 21 patients addicted to slowly eliminated barbiturates, but 12 cases among 42 patients addicted to rapidly eliminated barbiturates.

Electro-encephalographic (E.E.G.) changes.—3 addicts had E.E.G.s recorded shortly after the psychosis had subsided, and 2 addicts at its clinical culmination as well as after its termination. Dr. M. Lennox reported that they showed no changes typical of withdrawal psychoses (Wulff 1955). This series is, however, small and heterogeneous.

Hence, the psychoses differed from spontaneous withdrawal psychoses in beginning in some cases when the blood-level of barbituric acid was relatively high and in not varying in frequency with the rate of elimination of the barbiturate. In this small series, moreover, the E.E.G. did not show changes characteristic of withdrawal psychoses.

Other Possible Factors

In a few cases there were other obvious ætiological possibilities. This applies particularly to 2 non-addicts, 1 of them had undergone operation for a benign brain tumour, and was in a debilitated general condition on wakening. The other was a 67-year-old woman who had fever and severe diarrhœa after wakening from serious poisoning. Both may be presumed to have had a particular tendency to exogenous psychotic reactions. In the case of the schizophrenic patient it was difficult to evaluate the symptoms, but they differed from the symptoms which he had exhibited for the past fifteen years. He described his experiences vividly, but he was extremely reserved and elusive when asked about his "usual" symptoms. Spontaneous withdrawal psychosis might be expected to occur among one or two of 12 drug addicts.

TABLE II—PSYCHOSES IN ADDICTS AND NON-ADDICTS RELATED TO BARBITURATES, CLASSIFIED BY RATE OF ELIMINATION

Rate of elimination	Addicts		Non-addicts	
	Total	Psychosis	Total	Psychosis
Rapid* (26 patients)	8	6	18	3
Slow† (12 patients)	2	1	10	2
Compounds‡ (12 patients) ..	2	2	10	1
Total (50)	12	9	38	6

* Allypropymal, amylobarbitone, hexobarbitone.
† Phenobarbitone, barbitone.
‡ Allypropymal plus barbitone or phenobarbitone.

Megimide

Despite the ætiological doubts in a few cases, especially of non-addicts, megimide seems to have been the decisive causal factor in the great majority of these 15 cases, which were characterised by previous addiction to drugs or, in non-addicts, by long-lasting unconsciousness after administration of megimide.

Convulsions

During treatment with megimide 16 of the 50 patients developed convulsions. 4 had from one to eight severe, typical grand-mal seizures, and 12 had petit mal. The normal reflexes returned during the treatment, which also frequently induced abnormal reflexes characterised by contractions of the facial muscles after a light slap on the cheek or forehead. Often, several hours after the treatment had been discontinued manipulations with the unconscious patient would elicit convulsions. None of the patients had clinically manifest epilepsy.

Often the convulsions were preceded by no clinica signs. In 6 cases they appeared after 0·5 g. of megimide

and the frequency did not increase with increasing dosage.

All 4 patients who had grand-mal seizures had been poisoned by rapidly eliminated barbiturates: they comprised 3 of the 8 addicts and only 1 of the 18 non-addicts who had taken drugs in this category.

Half of the 12 addicts developed convulsions, compared with a quarter of the 38 non-addicts.

Half of the 15 patients who developed psychoses had convulsions, compared with a quarter of the remaining 35.

Poisoning due exclusively to slowly eliminated barbiturates seemed to afford good protection against convulsions.

Since half the cases of convulsions occurred in patients who were non-addicts and who did not develop psychosis, convulsions during administration of megimide cannot be regarded as a sign of previous addiction or impending psychosis.

Discussion

Clinically the psychoses after administration of megimide closely resembled spontaneous withdrawal psychoses; they occurred mainly in addicts to barbituric acid, among whom the incidence was high. They occurred also in non-addicts who had been taking barbituric acid in therapeutic doses prior to the poisoning and who remained unconscious for a long time after the administration of megimide. The frequency of psychoses was highest, and the latent period shortest, after large doses of megimide. Convulsions were commoner in patients who were drug addicts and who later developed psychoses than in others.

The differences between these provoked psychoses and spontaneous withdrawal psychoses are perhaps due to an alteration caused by megimide in the interrelation between the ingested barbiturate and the organism, although megimide does not seem to affect the rate of elimination or the blood-level on wakening.

The psychoses were benign, but to the patients and their next of kin they were ghastly experiences.

Treatment with megimide is not contra-indicated because of the risk of psychosis, but owing to this risk the drug should be administered only in accordance with strict indications, particularly in drug addicts.

Summary

Among 50 patients treated with megimide for acute barbituric-acid poisoning, delirious psychosis dominated by visual hallucinations developed in 15.

The frequency of psychosis was greatest after large doses of megimide; and in these cases the latent period between wakening and the onset of psychosis was briefest.

9 of the cases of psychoses occurred among 12 barbiturate addicts. Among the 38 non-addicts there were 6 cases of psychosis. These 6 patients, who had previously been taking barbiturates in therapeutic doses, had remained unconscious for a long time after administration of megimide.

Convulsions occurred during treatment with megimide in half the barbiturate addicts and in half the patients who developed psychoses, but in only a quarter of the non-addicted patients who did not develop psychoses.

These psychoses are apparently exogenous reactions provoked by megimide in barbituric-acid habitués. They resemble spontaneous withdrawal psychoses, but there are certain differences.

REFERENCES

Clemmesen, C. (1956) *Lancet*, ii, 966.
Shaw, F. H. (1955) *Brit. med. J.* i, 1238.
Wulff, M. H. (1955) *Ugeskr. Læg.* **117**, 1639.

BLOOD-GROUPS IN RELATION TO MALIGNANT DISEASES

W. W. WALTHER
M.B. Lond.
AREA PATHOLOGIST

C. RAEBURN
M.R.C.S.
MORBID ANATOMIST

J. CASE
F.I.M.L.T.
SENIOR TECHNICIAN

AREA LABORATORY, WHIPPS CROSS HOSPITAL, LEYTONSTONE, LONDON

IN patients with cancer of the stomach blood-group A is commoner than in the general population (Aird et al. 1953), but no significant change in frequency of the ABO blood-groups or of the rhesus group (D) is associated with cancer of the colon, rectum, breast, or bronchus (Aird et al. 1954) or of the lung (McConnell et al. 1955).

Since 1953 we have tested for A_1, A_2, B, O, rhesus (D) and MN blood-groups and the blood-group-substance secretor phenomenon in all cases of malignant disease which we were able to investigate at this hospital, together with some cases kindly referred by Dr. H. Caplin, of the Connaught Hospital, Walthamstow, and by Dr. A. J. E. Brafield, of this department, who collected post-mortem material from Langthorne Hospital, Leytonstone. No cases were accepted unless a precise diagnosis of malignancy was established histologically. A thousand cases have now been collected. No new clear-cut correlations have been demonstrated, though a few suggestive trends have been observed. Progress in this field must depend on the observation of very large numbers of cases beyond the scope of any individual hospital, and the present results are reported mainly so that they can be combined with series collected at other hospitals.

Table I shows the blood-group distribution of this series according to site, and in order of frequency, of the malignant condition. Certain figures, given in bold type

TABLE III—SECRETOR STATUS OF HEALTHY CONTROLS AND OF PATIENTS WITH MALIGNANT DISEASES BELONGING TO BLOOD-GROUPS A AND O

Type or site of primary growth	Secretor		Non-secretor	
	A	O	A	O
Bile-duct	4	5	1	2
Urinary bladder	4	10	2	6
Brain	1	7	1	..
Breast	50 (81%)	44 (19%)	12 (85%)	8 (15%)
Bronchus	63 (83%)	53 (79%)	13 (17%)	15 (21%)
Cæcum	2	6	1	2
Colon	39	31	6	12
	41 (85%)	37 (73%)	7 (15%)	14 (27%)
Hodgkin's disease	4	3	4	0
Kidney	9	4	0	3
Larynx or vocal cords	3	6	1	0
Lymphatic leukæmia	9	5	1	1
Myeloid leukæmia	5	7	0	3
Œsophagus	9	8	0	0
Ovary	12	10	2	4
Pancreas	6	4	1	0
Prostate	15 (88%)	16 (76%)	2 (12%)	5 (24%)
Rectum	23 (82%)	17 (68%)	5 (18%)	8 (32%)
Rodent ulcer or epithelioma	5	5	1	3
Sarcoma	7	8	3	2
Stomach	34 (83%)	20 (80%)	7 (17%)	5 (20%)
Uterus and cervix	19 (86%)	16 (84%)	3 (14%)	3 (16%)
Miscellaneous	25	18	4	5
Total	348 (83%)	303 (78%)	70 (17%)	88 (22%)
Healthy controls	38 (78%)	35 (70%)	11 (22%)	15 (30%)

TABLE I—BLOOD-GROUPS OF PATIENTS WITH MALIGNANT DISEASE

Type or site of primary growth	No.	Sex		Blood-group												
		M	F	A_1B	A_2B	A_1	A_2	B	O	Rh+	Rh−	M	MN	N	Sec.	Non-sec.
Cæcum, colon, or rectum	185	82	103	6	1	65	15	17	81	151	34	52	95	35	133	39
Bronchus	184	156	28	5	0	70	17	13	79	144	40	57	96	29	129	32
Female breast	137	0	137	0	3	54	10	16	**54**	122	**15**	33	63	**40**	109	24
Stomach	97	57	40	6	0	**46**	9	**4**	32	83	14	32	**35**	19	62	13
Leukæmia (including lymphosarcoma)	46	20	26	1	0	11	8	4	22	38	8	7	30	7	31	9
Prostate	45	45	0	1	0	16	3	2	23	33	**12**	14	23	7	34	7
Uterus and cervix	45	0	45	0	1	15	8	2	19	37	8	13	21	10	36	7
Ovary	33	0	33	1	0	13	2	3	14	28	5	11	13	7	24	8
Urinary bladder	25	**18**	7	0	1	6	1	1	**16**	23	2	5	14	6	16	8
Sarcomas	21	8	13	0	0	3	**6**	3	9	19	2	8	9	3	14	6
Rodent ulcer and epithelioma	20	11	9	2	1	4	2	2	8	17	3	5	13	2	14	6
Œsophagus	20	13	7	1	0	9	1	1	8	16	4	9	10	1	**19**	0
Bile-duct and gall-bladder	18	4	**14**	1	0	3	2	2	**10**	17	1	4	7	7	12	3
Kidney	17	9	8	0	0	**6**	3	0	8	15	2	6	9	2	13	3
Brain	13	5	8	0	0	3	1	2	7	9	4	4	7	2	11	1
Pancreas	13	8	5	1	0	6	2	0	4	8	5	5	5	3	11	1
Hodgkin's disease	11	8	3	0	0	8	0	0	3	8	3	4	5	1	7	4
Vocal cords and larynx	10	**10**	0	0	0	3	1	0	6	9	1	6	2	2	9	1
Tongue	8	6	2	0	0	4	1	0	3	8	0	2	5	1	5	1
Reticuloses (including reticulosarcoma)	7	5	2	0	0	4	0	0	3	4	3	1	4	2	6	0
Liver	6	4	2	0	0	1	2	0	3	5	1	0	6	0	5	0
Malignant melanoma	6	1	5	0	1	3	1	1	0	5	1	4	2	0	4	1
Thyroid gland	6	2	4	0	0	2	2	0	2	6	0	1	3	2	3	2
Vulva and vagina	6	0	6	0	0	1	2	0	3	4	2	1	3	2	6	0
Testis	4	4	0	0	0	1	0	0	3	2	2	0	3	1	4	0
Adrenal gland	3	3	0	1	0	0	0	1	1	2	1	0	2	1	2	1
Multiple myeloma	3	1	2	0	0	0	0	0	3	2	1	0	3	0	3	0
Duodenum and small intestine	2	2	0	0	0	0	1	0	1	1	1	2	0	0	1	1
Pharynx	2	2	0	0	0	1	0	0	1	2	0	2	0	0	1	0
Urethra	2	2	0	0	0	1	0	0	1	2	0	1	1	0	2	0
Antrum	1	1	0	0	0	1	0	0	0	1	0	0	0	1	1	0
Male breast	1	1	0	0	0	1	0	0	0	1	0	1	0	0	1	0
Penis	1	1	0	0	0	0	0	0	1	1	0	1	0	0	1	0
Trachea	1	0	1	0	0	0	0	0	1	0	1	0	0	1	1	0
Ureter	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0
Total	1000	490	510	26	8	362	100	75	429	824	176	291	489	195	730	178

in the table, indicate the suggestive trends already mentioned and may indicate possible lines for future work. For instance, breast cancers show low O and Rh-negative frequency with raised N frequency. Cancer of the stomach, which is only the fourth commonest form of cancer in this hospital, shows the expected excess of A_1 (rather than A_2) and reduction of B (Aird et al. 1953), and low frequency of MN. There is a tendency towards a high Rh-negative frequency in patients with cancer of the prostate. Cancers of the urinary bladder are mainly in patients belonging to group O and mostly in males; sarcomas (all sites) show an excess of A_2; all the patients with œsophageal cancer tested were secretors; most of the patients with biliary cancer were in group O and were women; all the larynx and vocal-cord cancers were in men.

Table II compares the total figures for our series (*a*) with the following: (*b*) the same but excluding stomach cancers; (*c*) routinely grouped hospital patients, not including peptic ulcers, antenatal patients, and malignant diseases; (*d*) blood-donors from the area served by this hospital (A. C. Kopec, personal communication); and (*e*) the average frequencies for Southern England (Race and Sanger 1954).

TABLE II—BLOOD-GROUPS OF PATIENTS WITH MALIGNANT DISEASES COMPARED WITH CONTROLS

Population	No.	Sex		Blood-group												
		M	F	A_1B	A_2B	A_1	A_2	B	O	Rh+	Rh−	M	MN	N	Sec.	Non-sec.
(*a*) Malignant diseases	1000	490 (*49%*)	510 (*51%*)	26 (*2·6%*)	8 (*0·8%*)	362 (*36·2%*)	100 (*10·0%*)	75 (*7·5%*)	429 (*42·9%*)	824 (*82·4%*)	176 (*17·6%*)	291 (*30%*)	489 (*50%*)	195 (*20%*)	730 (*80·5%*)	178 (*19·5%*)
				3·4%		*46·2%*										
(*b*) Malignant diseases excluding stomach cancers	903	433	470	20	8	316	91	71	397	741	162	259	454	176	667	164
				28 (*3·1%*)		407 (*45%*)		(*7·9%*)	(*44%*)	(*82%*)	(*18%*)	(*29%*)	(*50%*)	(*21%*)	(*80%*)	(*20%*)
(*c*) Hospital cases, not including malignant diseases, peptic ulcers, or antenatals	1002	..	..	31	9	337	105	91	429	816	186	..	..	..	..	..
				40 (*4·0%*)		442 (*44·1%*)		(*9·1%*)	(*42·8%*)	(*81·4%*)	(*18·6%*)	..	..	..	..	..
(*d*) Local blood-donors*	2325	..	..	73 (*3·2%*)		1023 (*44%*)		159 (*6·8%*)	1070 (*46%*)	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
(*e*) Normal distribution (Race and Sanger 1954) to nearest whole number	..	..	..	*3%*	*1%*	*35%*	*10%*	*8%*	*44%*	*86%*	*14%*	*28%*	*50%*	*22%*	*78%*	*22%*
				4%		*45%*										
				South England						London		South England			European	

* Dr. Kopec does not give figures for Rh tests because she considers that they are too variable, Rh-negative lying somewhere between the extremes of 15% and 22%.

TABLE IV—LUNG CANCERS ACCORDING TO HISTOLOGICAL TYPE

Type	No.	Sex		Blood-group												
		M	F	A_1B	A_2B	A_1	A_2	B	O	Rh +	R–	M	MN	N	Sec.	Non-sec.
Squamous	48	41	7	2	0	17	2	5	22	44	4	16	22	10	35	7
Adenocarcinoma ..	31	25	6	0	0	12	5	2	12	23	8	9	12	9	23	5
Oat-celled	62	55	7	2	0	21	5	6	28	46	16	18	39	5	41	10
Polygonal-celled ..	23	20	3	1	0	11	0	0	11	17	6	6	14	3	14	6
Unclassified*	20	15	5	0	0	9	5	0	6	14	6	8	9	2	16	4
Total	184	156	28	5	0	70	17	13	79	144	40	57	96	29	129	32

* These 20 cases were diagnosed clinically and radiologically as carcinoma of bronchus and proved histologically as malignant, but with insufficient material to give a firm opinion on the primary site or cell type.

TABLE V—MALIGNANT AND BENIGN ENLARGEMENT OF PROSTATE COMPARED *

Type	No.	Blood-group												
		A_1B	A_2B	A_1	A_2	B	O	Rh +	Rh–	M	MN	N	Sec.	Non-sec.
Malignant ..	45	1 (2%)	0	16	3	2 (4%)	23 (51%)	33 (73%)	12 (27%)	12 (29%	23 (55%)	7 (16%)	33 (83%)	7 (17%)
				19 (42%)										
Benign.. ..	100	4	0	42	14	4	36	84	16	20	56	22	76	23
				56										

* The percentage figures are, of course, only approximate and are given for comparison only.

Compared with the controls, the over-all figures for malignant diseases (all sites but excluding stomach cancers) show no significant deviation, and no statistical significance is claimed for the variations shown in tables I and II.

Table III shows the number of secretors and non-secretors according to blood-group (A and O only) for the commoner sites of malignant disease and a small series of healthy normals. Percentage figures have also been given in some cases. The tendency shown by group-A patients to have a greater frequency of secretors (previously reported for healthy people by Formaggio 1951 and other workers) is probably due to technique, because different reagents were used; this tendency is also reflected in the controls but at a lower level. At first it was thought that the number of secretors among patients with breast cancer increased with age, but the difference is not great, the average age of the 24 non-secretors being 55 and of the 109 secretors 57·3.

The lung cancers in this series were classified according to histological type (Raeburn and Walther 1956) (table IV). The low Rh-negative figure for the squamous lung cancers is not statistically significant, but this point is being investigated further.

As a convenient control for prostatic cancers, cases of benign prostatic enlargement were also grouped, and the results are compared in table V, which shows a noticeable difference in the A : O ratio in the two types of prostatic enlargement and in the number of Rh-negatives. This too is being investigated further.

Summary

The results of grouping (A_1, A_2, B, O, Rh (D), M, N, and secretor state) of 1000 consecutive cases of malignant disease collected in three years are reported.

No statistically significant differences from the general population were found, but certain unusual features are indicated and these will be explored further.

This work was undertaken with the assistance of a grant from the British Empire Cancer Campaign. We are indebted to the medical, nursing, and auxiliary staffs of the hospital, who have so kindly facilitated the investigation of the patients; to Dr. Keith Simpson for some post-mortem material; to the staffs of various hospitals, particularly the London Hospital, for giving follow-up records of patients referred to them; and especially to Dr. A. E. Mourant, who kindly supplied the grouping sera and helped with much valuable advice, and Dr. A. C. Kopec, of the Nuffield Blood Group Centre, for supplying figures for controls and for help and advice.

REFERENCES

Aird, I., Bentall, H. H., Mehigan, J. A., Roberts, J. A. F. (1954) *Brit. med. J.* ii, 315.
— — — Roberts, J. A. F. (1953) *Ibid*, i, 799.
Formaggio, T. G. (1951) *Minerva Medicolegale*, **71**, 34. Cited by Race and Sanger (1954).
McConnell, R. B., Clarke, C. A., Downton, F. (1955) *Brit. med. J.* ii, 674.
Race, R. R., Sanger, R. (1954) Blood Groups in Man. Oxford.
Raeburn, C., Walther, W. W. (1956) *Lancet*, i, 778.

STRANGULATED DUODENAL HERNIA COMPLICATING PARTIAL GASTRECTOMY

LESLIE SIMON
M.B., B.Sc. Edin., F.R.C.S., F.R.C.S.E.
SURGICAL REGISTRAR, ST. MARY ABBOT'S HOSPITAL, LONDON

THIS appears to be the first reported case of strangulation of a duodenal hernia presenting as a complication of partial gastrectomy.

Case-report

A male boot-repairer, aged 51, was admitted to St. Mary Abbot's Hospital on Dec. 7, 1955, with abdominal pain and vomiting. A history of twenty years' stomach trouble was elicited. He had suffered periodically from bouts of upper abdominal pain, which came on at any time during the day, apparently unrelated to meals, and were relieved by powders and milk. He also complained of the regurgitation of acid fluid. Recently, the pain had started waking him up during the night. For ten days before admission he had vomited frequently and copiously and had griping central abdominal pain, which reached its maximum before he vomited, after which it temporarily subsided. He also had diarrhœa. In 1950 he had been treated medically for long-standing dyspepsia due to a duodenal ulcer diagnosed radiologically.

On examination he was extremely thin and very dehydrated. There was fullness of his epigastric region, and visible gastric peristaltic waves moved from left to right across his upper abdomen. A loud succussion splash was elicited, though for more than twelve hours he had taken nothing by mouth.

Investigations.—A fractional test-meal revealed a high free-acid level (80 clinical units). Fluid balance and electrolytes were corrected, and daily gastric lavage was instituted. Noticeable improvement took place, enabling the presence of pyloric stenosis to be confirmed by a barium meal a week after admission (fig. 1). There was no radiological evidence of malignancy.

Partial gastrectomy was done on Jan. 28, 1956. Through a right upper paramedian incision a greatly dilated stomach

with much stenosis at its outlet was easily withdrawn. The first part of the duodenum was mobilised with some difficulty owing to the presence of numerous adhesions and was divided distal to the lesion. Secure closure was achieved. An antecolic anastomosis, with a Hoffmeister valve, was made between the proximal jejunum and the gastric remnant. About five-sixths of the stomach was resected. The wound was closed in layers without drainage.

Postoperative progress, apart from a troublesome cough, was at first uneventful; but about 9 A.M. on the ninth postoperative day he had sudden severe griping epigastric pain, and in the next two hours he vomited thrice. The pain was persistent and only partly relieved by an intramuscular injection of pethidine. Thereafter, he brought up only a watery colourless fluid; at no time was it bile-stained. He looked pale and ill. There was no abdominal distension, but movement of the upper abdomen on respiration was definitely diminished. Tenderness and resistance were found in the epigastrium and just to the left of the midline. Obstruction due to a loop of small gut passing through the space between the anastomosis in front and the transverse colon behind was provisionally diagnosed. A Ryle's tube was passed, and an intravenous drip of physiological saline solution was started. Radiography showed no signs of distended gut or fluid levels (fig. 2). After a few hours' observation it became obvious that the drip and gastric suction were not relieving the symptoms, and further examination revealed rebound tenderness in the upper abdomen, a sign which had previously been absent. Although the pulse had altered but little, the diagnosis of an internal strangulation seemed more in keeping with the clinical picture.

Fig. 1—Barium-meal radiograph showing pyloric stenosis.

Operation.—The abdomen was reopened under general anæsthesia. The peritoneal cavity held some free blood-stained fluid. When the transverse colon and mesocolon were lifted up, a tense bluish hemispherical swelling about 4 inches in diameter was seen on the posterior abdominal wall below the third part of the duodenum; it consisted of a loop of distended small intestine lying in a retroperitoneal cul-de-sac. On the left side of the swelling the entering and emerging limbs of the trapped gut were clearly defined. The strangulated gut was the proximal part of the afferent limb of the gastrectomy anastomosis. The remainder of the afferent limb was pulled taut and stretched from the neck of the sac to the anastomosis. The efferent limb was unaffected. The opening of the sac faced to the left and upwards, and coursing over it, in its anterior margin, was the superior mesenteric artery (fig. 3). The strangulated gut was liberated, and 12 oz. of bile in the loop regurgitated through the anastomosis and was aspirated via the Ryle's tube. The gut was dark-red, congested, and œdematous, but viable. The afferent limb, from the duodeno-jejunal junction to the lesser curve of the gastric remnant, measured about 10 inches, and the strangulated segment 4 inches. The hernial sac admitted two fingers easily. An attempt to turn the sac inside out was unsuccessful. Owing to the presence of blood-vessels round the opening of the sac, closure by stitching the edges together was not attempted. Instead the previously trapped gut was laid over the mouth of the sac and stitched down to cover it completely. The gut lay comfortably and without tension in this position. After the bloodstained fluid had been sucked out from the peritoneal cavity, the abdomen was closed.

Fig. 2—Plain radiograph with patient erect three hours after onset of strangulation of duodenal hernia.

Postoperatively the patient was given a blood-transfusion followed by a slow intravenous saline drip, and within twenty-four hours he was taking water by mouth. He left hospital twenty-eight days after the second operation. Two weeks later he attended the outpatient clinic and said he was eating well, was free from abdominal symptoms, and was feeling much stronger. Fig. 4 shows the final barium-meal examination.

Discussion

One of the earliest published cases of strangulated duodenal hernia was that described to the Hunterian Society by Ridge in 1854. In a boy, aged 14, "an opening, apparently in the mesentery, was recognised by the operator's finger at the point where the jejunum becomes comparatively free from the spine, and through this was drawn a coil of intestine 6–8 inches long, distended and congested but not yet gangrenous." This was almost certainly a strangulated right duodenal hernia.

Equally remarkable was the case in a boy, aged 18, reported by Barrs (1891).

Pye-Smith (1871) was the first in this country to describe the duodeno-jejunal fossa, which enables this form of retroperitoneal hernia to occur; but the hernia

Fig. 3—Proximal part of afferent limb of jejunum strangulated in right duodenal hernia.

was already known as Treitz's hernia on the Continent (Treitz 1857). Treves (1885) described the development of the fossa, and the anatomy and significance of the peritoneal fossæ in relation to the duodenum, and the then existing knowledge on the subject of internal herniæ, were ably presented by Lord Moynihan in the Arris and Gale lectures of 1899.

Fig. 4—Barium-meal radiograph a week after patient left hospital: note passage of barium from gastric remnant into efferent limb of jejunum.

By definition, a right duodenal hernia occurs into that peritoneal fossa situated immediately below the third part of duodenum and bounded in front by the mesentery of the jejunum. Behind it are the lumbar vertebræ covered by peritoneum. The orifice of the fossa looks towards the left, and the superior mesenteric artery runs in the anterior free margin. The peritoneum of the left leaf of the mesentery lines the fossa, and that of the right covers the blind end and is then continued directly into the posterior parietal peritoneum.

Broesike (1891) stated that, in cases of right duodenal hernia, the upper few inches of jejunum was bound to the posterior abdominal wall, and he believed that this abnormality was essential for the formation of this type of hernia; but Moynihan (1899) showed that this was not so. Nevertheless, in the present case, the proximal part of the jejunum had an extremely short mesentery, and, to enable the jejunum to lie without undue tension at the gastrectomy anastomosis, about ten inches had to be allowed for the afferent loop.

In a case reported by Turner and Scholefield (1930) an emergency operation for a perforated duodenal ulcer was followed, four days after the patient's discharge from hospital, by a strangulated left duodenal hernia.

Intestinal obstruction as a complication of partial gastrectomy is well known. Stammers (1954) described six varieties of obstruction, five of which were associated with the antecolic type of the Polya operation. In these cases a coil of intestine passed through the gap bounded in front by the anastomosis and behind by the transverse colon. Morton et al. (1955) have recorded obstruction complicating the retrocolic operation, where gut passed through the gap behind the anastomosis and in front of the posterior parietal peritoneum. Obstruction can also be caused by jejuno-gastric intussusception and by herniation of small intestine through an opening in the transverse mesocolon (after the retrocolic operation).

I wish to thank Mr. J. M. Milloy, surgeon-superintendent of St. Mary Abbot's Hospital, for allowing me to operate on this patient.

REFERENCES

Barrs, A. G. (1891) *Lancet*, ii, 286.
Broesike, G. (1891) Veber intraabdominale (retroperitoneale) Hernien und Bauchfelltaschen. Berlin.
Morton, C. B. jun., Aldrich, E. M., Hill, L. D. (1955) *Ann. Surg.* **141**, 759.

References continued at foot of next column

AN UNUSUAL COMPLICATION OF BLADDER DIVERTICULUM

I. J. GORDON
M.B. Aberd., F.R.C.S.
SURGICAL REGISTRAR, EDGWARE GENERAL HOSPITAL, MIDDX.

A DIVERTICULUM of the bladder is a not uncommon finding and consists essentially of a herniation of the mucosa through a weakness in the muscles. Congenital diverticula usually occur just above the ureter in the region of fusion of the wolffian and cloacal origins of the bladder, and acquired or pulsion diverticula, secondary to obstruction of the bladder outlet, in addition to occurring in the para-ureteric regions, may also arise elsewhere in the bladder but never through the trigone.

Diverticula, per se, produce little in the way of signs or symptoms except the condition known as *pisse en deux*. Apart from this, the signs and symptoms are due to the development of some complication.

The well-known complications of bladder diverticulum are infection, calculus, benign or malignant papillomata, and pressure effects by large juxta-ureteric diverticula producing partial ureteric obstruction, hydronephrosis, and sequelæ in the form of infection and calculi in the affected kidney. The complication discussed here has not, to my knowledge, been previously described.

Case-report

A man, aged 73, had previously enjoyed good health, apart from an attack of cystitis some eighteen months previously, which had settled after a course of sulphonamide. Mild prostatic symptoms, in the form of slightly increased diurnal frequency and occasional nocturia, were no inconvenience to him. About twelve hours before admission he developed colicky central abdominal pain associated with nausea and, later, vomiting, the vomit containing upper intestinal fluid latterly. His abdomen was slightly distended, and the bowel sounds were increased in frequency and obstructive in quality. There was some tenderness suprapubically as well as on rectal examination, and all the signs and symptoms pointed to obstruction of the small bowel.

Laparotomy revealed several dilated loops of small intestine. The obstruction was due to herniation of a small loop of ileum into a diverticulum which, arising from the vault of the bladder, had become inverted into the cavity of the bladder. The neck of the diverticulum was stretched, and the loop of intestine withdrawn. A few adhesions between the intestine and diverticulum were divided and a diverticulectomy done. The patient was well enough to leave hospital fifteen days later.

Discussion

The diverticulum was of the acquired type, with walls consisting of mucosa with a thin covering of connective tissue and a few strands of muscle. Presumably during the previous attack of cystitis the diverticulum became infected, and a mild degree of peridiverticulitis caused adhesions to form between it and a loop of small bowel.

At some stage the tension within the peritoneal cavity must have exceeded that within the bladder, thus invaginating the diverticulum into the cavity of the bladder and causing the loop of small bowel to enter what was now, to all intents and purposes, a hernial sac into the bladder.

Summary

A case of acute intestinal obstruction is described in which the involved loop of ileum had been strangulated within an invaginated vesical diverticulum.

I wish to thank Mr. N. S. Slater for advice and helpful criticism.

MR. SIMON: REFERENCES—*continued*

Moynihan, B. G. A. (1899) On Retroperitoneal Hernia. London.
Pye-Smith, P. H. (1871) *Guy's Hosp. Rep.* **16**, 131.
Ridge, J. (1854) *Ass. med. J.* lxxi.
Stammers, F. A. R. (1954) *Brit. J. Surg.* **42**, 34.
Treitz, W. (1857) Hernia retroperitonealis. Prague.
Treves, F. (1885) *Brit. med. J.* i, 415.
Turner, P., Scholefield, B. G. (1930) *Guy's Hosp. Rep.* **80**, 305.

Preliminary Communication

5-HYDROXYTRYPTAMINE EXCRETION IN PATIENTS WITH CARCINOMA OF THE LARYNX AND BRONCHUS

CASES of argentaffinoma have raised levels of 5-hydroxytryptamine (serotonin or 5-H.T.) in the blood and excrete 5-hydroxyindolyl acetic acid (5-H.I.A.A.) in the urine. Estimations of 3-hydroxyanthranilic acid, 3-hydroxykynurenine, anthranilic acid, and kynurenine, using a column chromatographic method, revealed that the excretion of these substances is greater in patients suffering from cancer of the bladder than in normal subjects.[1]

In a further investigation of the metabolism of tryptophan in relation to different types of cancer a quantitative method using paper chromatography has been developed by means of which sixteen known metabolites can be estimated.

METHOD

The metabolites were absorbed by passing the urine through a small charcoal column and eluted with aqueous phenol.[2]

TABLE I—PATIENTS SUFFERING FROM ARGENTAFFINOMA

Case	Treatment	Urine volume (ml. per 24 hr.)	Metabolites in urine (mg. per litre)			Days from operation
			5-H.T.	5-H.I.A.A.	I.A.A.	
1	..	1025	5·0	215	14·0	..
2	..	1900	7·0	166	7·0	..
3	..	..	trace	108	3·0	..
4	..	735	4·5	17·0	..	..
5	..	2020	7·0	20	..	−62
	..	910	4·0	28	..	−8
	T	1230	13·0	33	1·0	−7
	T	1850	7·5	25	1·5	−6
	T	1310	11·0	48	0·5	−5
	T	1100	1·4	11·5	..	+14
	T	1070	3·0	16·5	trace	+15
	..	2180	3·5	6·5	trace	+16
	..	1430	6·0	5·0	0·7	+26
	T	1420	9·5	11·0	2·0	+27
	T	1720	7·0	trace	trace	+60

T = 2 g. *l*-tryptophan.

The eluate was evaporated to dryness, dissolved in water, applied to large sheets of Whatman no. 1 paper and developed in a downward direction for 18 hours with butanol/acetic-acid/water (4 : 1 : 5).[3] The dried chromatograms were examined under ultraviolet light, then after treatment with ninhydrin, and finally after dipping in an acetone solution of Ehrlich's reagent (0·5% *p*-diethylaminobenzaldehyde in 5% hydrochloric acid). The fluorescent and coloured spots were all outlined in pencil and the areas measured with an Allbrit fixed arm planimeter. Chromatograms were developed in the same way, using known amounts of standard substances.

The relationship between the logarithm of the amount applied and the area of the resulting spots was almost linear with tryptophan, anthranilic acid, 3-hydroxyanthranilic acid, 5-hydroxyanthranilic acid, 3-hydroxyanthranilic acid sulphuric ester, kynurenine, 3-hydroxykynurenine, indolyl acetic acid, tryptamine, 5-H.T., 5-H.I.A.A., indoxyl sulphate, kynurenic acid, and xanthurenic acid. All these substances can be estimated on a single one-way chromatogram, except that kynurenic acid and xanthurenic acid are insufficiently separated to be estimated separately.

1. Boyland, E., Williams, D. C. *Biochem. J.* 1956, **64**, 578.
2. Asatoor, A., Dalgleish, C. E. *J. chem. Soc.* 1956, p. 2291.
3. Partridge, S. M. *Nature, Lond.* 1946, **158**, 270.

TABLE II—PATIENTS WITH CANCER OF VARIOUS SITES EXCRETING 5-H.T. OR 5-H.I.A.A. AFTER INGESTION OF 2 G. *l*-TRYPTOPHAN

Site of malignant disease	No. of cases	No. of patients (excreting either 5-H.I.A.A. or 5-H.T.)
None	16	None
Breast	4	1
Bronchus	7	6
Prostate	3	1
Bladder	26	3
Pyriform fossa ..	5	4
Vocal cords	12	12

TABLE III—PATIENTS SUFFERING FROM CARCINOMA OF VOCAL CORD

Case	Treatment	Urine volume (ml. per 24 hr.)	Metabolites in urine (mg. per litre)		
			5-H.T.	5-H.I.A.A.	I.A.A.
1	T	1080	1·5	..	..
2	..	1190	..	..	..
	T	1210	1·5	..	..
3	..	2460	2·5	trace	trace
	T	2300	5·0	trace	2·7
4	..	890	..	..	..
	T	900	trace	..	1·5
5	..	1700	trace	..	..
	T	1900	1·5	trace	0·2
6	..	2100	trace	..	..
	T	2320	3·5	trace	0·1
7	..	660	trace	..	..
	T	910	2·5	0·7	2·5
8	..	790	0·7	..	..
	T	1330	2·5	2·0	5·0
9	..	710	..	..	..
	T	540	3·5	1·5	2·5
10	..	740	..	..	..
	T	850	1·5	0·7	..
11	..	2630	trace	..	..
	T	2380	2·0	1·5	trace
12	..	1330	trace	..	..
	T	2590	2·0	1·5	trace

T = 2 g. of *l*-tryptophan.

The urines of normal subjects and of patients suffering from cancer of various sites, either under normal conditions or during the 24 hours following ingestion of 2 g. of *l*-tryptophan, have been examined by this method. Some of the data on excretion of 5-H.I.A.A., 5-H.T., and indolylacetic acid (I.A.A.) are given in this communication.

RESULTS

The urinary excretion of 5-H.T., 5-H.I.A.A. and I.A.A. in five cases of argentaffinoma is shown in table I. In all cases 5-H.T., as well as 5-H.I.A.A., is present in appreciable quantities, and four cases also produce measurable amounts of I.A.A. Results obtained, over a period of two months before and two months after surgical removal of liver metastases, are given in case 5. Although the 5-H.I.A.A. excretion decreased after operation, the excretion of the other metabolites did not. The patient showed regression of symptoms after operation, but he still had secondary carcinoid deposits in the liver which may account for the maintenance of high excretion of 5-H.T. and its metabolites.

TABLE IV—PATIENTS WITH CANCER OF SITES CLOSE TO THE VOCAL CORDS

Case	Treatment	Urine volume (ml. per 24 hr.)	Metabolites in urine (mg. per litre)			Site
			5-H.T.	5-H.I.A.A.	I.A.A.	
1	T	1910	..	0·8	0·2	Pyriform fossa
	T	2050	..	..	..	..
2	T	1370	0·5	..	..	False cord
3	T	860	..	..	..	Cord (healed)
4	T	1730	0·2	..	..	Pyriform fossa
5	T	1530	..	..	..	Pharynx
6	T	2340	..	..	..	Pyriform fossa
7	T	2590	0·8	..	..	Pyriform fossa
8	T	2350	..	..	trace	Pharynx
9	T	890	trace	..	..	Œsophagus
10	..	940	..	..	..	Pyriform fossa
	T	1530	..	..	..	..
11	..	2660	..	..	..	False cord
	..	2520	..	..	..	..

T = 2 g. of *l*-tryptophan.

Table II shows the urinary excretion of the three metabolites in patients suffering from cancer of various sites. In each group a few cases excrete 5-H.T. and 5-H.I.A.A. but in the group suffering from cancer of the

vocal cord all cases excrete 5-H.T. and the majority 5-H.I.A.A. after administration of 2 g. *l*-tryptophan; further details of this latter group are given in table III.

Table IV shows results, comparable with the above, from cases of cancer of sites close to the vocal cords. In a few of these cases very small amounts of the metabolites are produced.

Table V shows the excretion of the three metabolites in a number of cases of cancer of the bronchus. Six

TABLE V—PATIENTS SUFFERING FROM CANCER OF THE BRONCHUS

Case	Treatment	Urine volume (ml. per 24 hr.)	Metabolites in urine (mg. per litre)		
			5-H.T.	5-H.I.A.A.	I.A.A.
1	T	2200	..	..	..
2	T	1400	0·5	1·5	trace
3	T	1400	1·5	2·0	trace
4	..	1420	..	..	..
	T	1340	trace	3·5	2·0
5	..	1700	trace	..	..
	T	1090	0·8	1·5	trace
6	..	1230	trace	trace	..
	T	1980	1·0	5·0	trace
7	..	2270	..	trace	..
	T	2800	trace	trace	trace

T = 2 g. of *l*-tryptophan.

cases show excretion of all three substances after administration of 2 g. *l*-tryptophan but the amounts of substances excreted are small compared with the carcinoid group. The amounts of 5-H.T. and I.A.A. excreted by patients with cancer of the bronchus are mostly less than those excreted by cases of cancer of the vocal cord, but 5-H.I.A.A. is excreted in comparable amounts in both groups.

Confirmatory Tests.—In order to check that the substances shown on the chromatograms were identical with the corresponding synthetic substances, chromatograms

TABLE VI—CONFIRMATORY TESTS

—	5-H.T.	5-H.I.A.A.	I.A.A.
Rf (butanol/acetic-acid/water, 4 : 1 : 5) ..	0·52–0·55	0·75–0·78	0·93–0·97
Ultraviolet fluorescence	Slight pale blue	Slight blue	..
Ninhydrin	Grey-purple	Blue-purple	Purple
Folin-Ciocalteu reagent	Blue	Blue	..
Ehrlich's reagent ..	Blue-purple	Blue	Red-purple
Diazotised *p*-nitraniline	Blue-pink	Pink	..
Diazotised sulphanilic acid	Red-brown	Red-brown	Pale orange (on standing)

of natural and synthetic origin were compared by a number of confirmatory tests which are summarised in table VI. In each case the substances from urine were identical with those of synthetic origin.

SUMMARY

5-hydroxytryptamine or 5-hydroxyindolyl acetic acid have been found, following the administration of *l*-tryptophan, in the urine of patients suffering from cancer of the larynx, pyriform fossa, and bronchus. The concentration in these cases was lower than that in the urine of patients with argentaffinomas but higher than in urine from cancer-free patients.

We should like to thank Prof. F. C. Ormerod of the Institute of Laryngology, Dr. M. Sandler of the Royal Free Hospital, and Mr. W. A. Mill and Mr. R. W. Raven of the Royal Marsden Hospital for their helpful collaboration. This work has been supported by grants to the Chester Beatty Research Institute (Institute of Cancer Research: Royal Cancer Hospital), from the British Empire Cancer Campaign, the Jane Coffin Childs Memorial Fund for Medical Research, the Anna Fuller Fund, and the National Cancer Institute of the National Institutes of Health, U.S. Public Health Service.

E. BOYLAND
D.Sc., Ph.D. Manc.
J. E. GASSON
M.B. Cape Town, F.R.C.S.
D. C. WILLIAMS
Ph.D. Brist., A.R.I.C.

Chester Beatty Research Institute
(Institute of Cancer Research: Royal Cancer Hospital), London, S.W.3, and Royal Marsden Hospital, S.W.3

Medical Societies

ASSOCIATION OF CLINICAL PATHOLOGISTS AND ASSOCIATION OF CLINICAL BIOCHEMISTS

THE 57th general meeting of the Association of Clinical Pathologists was held in London on Oct. 4–6. There was also a joint meeting with the Association of Clinical Biochemists. Here follow short accounts of a few of the many papers

Myleran in Chronic Myeloid Leukæmia

Dr. E. K. BLACKBURN described the treatment of 20 cases of chronic leukæmia (19 myeloid, 1 neutrophilic) with busulphan ('Myleran'). The optimum daily dose averaged 0·06 mg. per kg. body-weight by mouth. With larger doses, thrombocytopenia might be precipitated. 8 of the 9 patients not previously treated had satisfactory remissions, and busulphan was thought to be life-saving in one of them who was quite unfit to travel for radiotherapy following gastrectomy. The patient who did not have a remission was the one with neutrophilic leukæmia. There were also satisfactory remissions in 4 out of 6 patients whose disease had become radio-resistant, in 3 of 4 other patients who had had previous irradiation, and in 1 patient who had had demecolcine therapy for 11 months. The terminal event in 7 of the 14 patients who died was acute relapse. Busulphan could be used justifiably if radiotherapy was not available or indicated, or if the disease was radio-resistant. It was preferable to other chemotherapeutic agents, excepting possibly demecolcine. Dr. Blackburn said we could not yet answer the question, "is busulphan an effective substitute for radiotherapy?"

Genesis of Bullæ

Dr. E. MILFORD WARD described the development of bullæ in subacute dermatitis, bullous pemphigoid, pemphigus vulgaris, pemphigus vegetans, and the Hailey syndrome. In the true pemphigus the bulla was intra-epidermal. It began by a specific form of degeneration of the prickle cells so that they became swollen and rounded. The bulla had an irregular margin due to the presence of swollen prickle cells, and similar degenerate cells, acantholytic cells or Tzanck cells, were found lying free within the bulla. The presence of such acantholytic cells was necessary before a diagnosis of true pemphigus vulgaris was made. The mortality of the disease was 100%.

Changes in the Nervous System in Vitamin-B_{12} Deficiency

Dr. A. L. WOOLF said that it had been recognised for many years that mental symptoms might occur in cases of subacute combined degeneration, and Dr. MacDonald Holmes had made a special study of these cases. He had not only noted the striking amelioration of symptoms after administration of vitamin B_{12}, but he had also shown that the mental symptoms may be unaccompanied by signs of spinal-cord involvement or other evidence of vitamin-B_{12} deficiency. Some other indirect indication of the deficiency was therefore desirable. The brains from two cases of subacute combined degeneration with mental changes were examined. Three changes were seen in the white matter: (1) a diffuse proliferation of microglia without pallor of myelin staining; (2) pallor of myelin staining associated with ballooning of myelin sheaths (no products of myelin breakdown accompanied 1 or 2); and (3) focal areas of complete breakdown of myelin with sudanophil products in amœboid microglia and light

fibrous gliosis. Muscle biopsy (including vital staining with methylene-blue and histological demonstration of acetyl cholinesterase) was useful in demonstrating the involvement of the lower motor neurone. This investigation had the advantage over cutaneous-nerve biopsy that it demonstrated the changes in the nerve-endings as well as in the nerve-fibres. The changes closely resembled those seen in cases of the Guillain-Barré syndrome, and might have relative diagnostic value—e.g., in their distinction from the appearances seen in diabetic neuropathy.

Abnormalities of Keto-acid Metabolism

Prof. R. H. S. THOMPSON referred to the early work in Sir Rudolph Peters's laboratory at Oxford on the changes in pyruvate metabolism in thiamine-deficient pigeons. Much of that early work has been done with relatively unspecific methods, such as the determination of the level of bisulphite-binding substances in the blood, and later the 2 : 4-dinitrophenylhydrazone method. These relatively primitive methods did, however, serve to reveal the increased level of pyruvate in the blood in thiamine deficiency. By using a "loading" dose of glucose to increase the sensitivity of the test, it had been shown that many patients with polyneuritis of different types showed high blood-levels of α-keto-acids. In only a proportion of these, however, were these high levels restored to normal by parenteral thiamine. To go further with this problem, therefore, it was necessary to use a more specific method to determine whether the accumulating keto-acid was in fact pyruvic acid. In 1949, Cavallini, Frontali, and Toschi introduced the next important step by using paper chromatography for the separation of the 2 : 4-dinitrophenylhydrazones of different keto-acids, and methods were soon devised for the quantitative elution and estimation of these separated derivatives. Interest had lately been taken in pyruvate metabolism in diabetes mellitus. Since in this condition the questions of insulin sensitivity and the availability of glucose for conversion into pyruvate were also concerned, the interpretation of blood-pyruvate levels was particularly difficult. Also, the possibility of an accompanying ketonæmia emphasised the need for highly specific analytical methods.

Dr. B. MCARDLE described a method for the quantitative determination of pyruvic and α-ketoglutaric acids employing the paper chromatographic separation of their 2 : 4-dinitrophenylhydrazones. The α-ketoglutarate excretion in women varied during the menstrual cycle in much the same way as that of citrate, being highest about the time of ovulation and during the second half of the cycle and falling immediately before or with the onset of the period. The excretion of pyruvate, related to that of creatinine, was unaffected by age and sex; it was often increased in hepatic and renal failure and in certain endocrine disorders. In neurological diseases, in which the excretion of α-ketoglutarate was little affected, the pyruvate was found increased in about half the cases of polyneuritis, in muscular disorders, in subacute combined degeneration, and occasionally in disseminated sclerosis and motor-neurone disease.

Sweat in Fibrocystic Disease of the Pancreas

Dr. P. T. FLUTE, Dr. B. W. WEBB, and Mr. M. J. H. SMITH, PH.D., reported that the sweat of 99% of children with fibrocystic disease of the pancreas showed persistently raised levels of sodium and chloride. Under controlled conditions of sweat collection, similar values were found only in primary renal or adrenal disorders.

Using a simple method of sweat collection, analysis of sweat from 12 patients with fibrocystic disease gave levels of sodium of 72 to 157 m.eq. per litre of sweat, and of chloride of 68 to 145 m.eq. per litre. Sweat from 20 children with various other diseases, and with no signs or symptoms referable to the gastro-intestinal tract, showed levels of sodium of 4 to 52 m.eq. per litre, and of chloride 9 to 40 m.eq. per litre. Thus, using the method described, amounts of either sodium or chloride greater than 70 m.eq. per litre, in the presence of the typical clinical symptoms and signs, strongly supported the diagnosis of fibrocystic disease.

Transaminase in Coronary Thrombosis

Dr. D. N. BARON, Miss JOYCE BELL, PH.D., and Dr. CELIA OAKLEY had estimated glutamic-oxalacetic transaminase in serum by the technique of Karmen; the normal range at 20°C was 7–25 units. In a normal individual the serum-transaminase did not vary from day to day and was unaffected by food, normal activity, and venous constriction. There was no alteration in the level when serum was kept for one week at room-temperature or for at least two weeks frozen. A rise was found in 21 clinical cases of infarction proven by E.C.G. or necropsy findings, and in 1 clinically probable case; there were no false negatives. The extent and duration of the rise depend on the size of the infarct, but usually exceed 75 units; the highest level in this series was 570 units. No rise was found in pulmonary embolism (7 cases) or acute abdomen (perforated peptic ulcer, biliary colic, cholecystitis, appendicitis, and intestinal obstruction), except in a patient with acute pancreatitis, in whom there was a rise to 600 units in the first 24 hours from the onset. A value above 1000 units was found in acute hepatic necrosis, high values in infective hepatitis and active alcoholic cirrhosis, and a normal value in chlorpromazine jaundice. High values had been found in patients with ruptured kidney and with hemiplegia due to cerebral embolism.

MANCHESTER MEDICAL SOCIETY

AT the society's meeting on Oct. 9 Dr. JOHN F. WILKINSON was installed as the new president, and delivered an address entitled What's Bred in the Bone....

He reviewed a series of 2211 patients with pernicious anæmia whom he and his staff had investigated over a period of twenty-eight years. Comparing the treatment of patients before liver therapy with those treated with various preparations of liver, stomach, folic acid, and vitamin B_{12} (cyanocobalamin), he demonstrated the excellent long-term results of treatment. The duration of life after diagnosis in the "pre-liver" days was on average six months: since then the outlook had changed completely. Now the normal expectation of life for properly treated patients with pernicious anæmia had been better even than that expected in their contemporaries not suffering from pernicious anæmia. In Dr. Wilkinson's series the mortality-rate was only 0·83% per year—almost entirely from diseases other than pernicious anæmia or subacute combined degeneration of the cord. Of the 1550 patients still attending the clinic, 758 were over 70, 283 over 80, 39 over 90, and 1 over 100. 114 were still well after at least twenty-five years, 472 after twenty years, and 750 after fifteen years—none having developed subacute combined degeneration of the cord.

Dr. Wilkinson discussed the significance of familial achlorhydria or achylia gastrica in non-anæmic families and also in pernicious anæmia and hypochromic anæmia, as well as its association with other conditions. He gave particular attention to the frequency of gastric cancer (39 cases, 1·93%) in his series of patients with pernicious anæmia. He described the occurrence, distribution, and significance of the stomach anti-pernicious anæmia factor (hæmopoietin), the liver principle, folic acid, and vitamin-B_{12} in various conditions in man and in animals, reptiles, and fishes.

Turning to the hypochromic achlorhydric anæmias in man and animals, Dr. Wilkinson demonstrated the familial aspects, especially of achylia or achlorhydria; and he discussed the modes of onset by reference to the curious effects that had been noted in circus artistes and in a series of investigations on ballet-dancers. Dr. Wilkinson also described the new National Hæmophilia Scheme, its objects, and its great value in helping and supervising the care and needs of the hæmophiliac. In his series of 180 patients with hæmophilia, only 67% had familial histories of the disease, the remainder being apparently due to new mutations. The importance of mutations was illustrated by a large family of hæmophiliacs who had given rise to widespread and grave repercussions.

Reviews of Books

Price's Textbook of the Practice of Medicine

9th ed. Editor: DONALD HUNTER, M.D., F.R.C.P., physician, The London Hospital. London: Oxford University Press. 1956. Pp. 1774. 63*s*.

A NEW edition of a distinguished textbook of medicine is always an event. After producing eight editions in 33 years, Dr. F. W. Price has handed over his charge to Dr. Hunter, who is aided by 26 eminent contributors. The new edition carries on the established tradition of excellent clinical descriptions and valuable essays on many subjects, such as blood-coagulation, antibiotics, and infection.

Many of the sections have been rewritten. Prof. L. J. Witts gives a masterly survey of diseases of the blood, and Dr. Wallace Brigden has written an excellent monograph on disorders of the cardiovascular system, which could scarcely be better in the space. Dr. Hunter himself writes from his wide knowledge of industrial diseases. Infectious diseases have been brought up to date by Dr. R. Bodley Scott: the retention of 12 pages on diphtheria underlines the value of the textbook in countries where the disease is still a menace. It is surprising to note that the mortality in typhoid fever remains the same as it was in 1934. Dr. J. Purdon Martin and Dr. J. St. C. Elkington maintain the high reputation that the section on disorders of the nervous system has always enjoyed. Dr. Brian Russell's section on diseases of the skin is encyclopædic in its survey and vivid in its descriptions. Dr. Leonard Simpson provides a well-balanced appraisal of endocrine disorders and their modern treatment. Good Kraepelin description of mental disease is given by Prof. Aubrey Lewis; but, now that the general physician is taking more interest in these disorders, fuller information on treatment would be welcome.

The use of "pyelitis" instead of "pyelonephritis" may be criticised, and so may the absence of corticotrophin (A.C.T.H.) in the treatment of nephrosis. Collagen disorders receive little attention, and sarcoidosis is described only in so far as it affects the lungs and skin. Decortication of the lung in the treatment of empyema and hæmothorax is not mentioned, and congestive cardiac failure does not appear as one of the complications of Paget's disease. The section on gout is scarcely altered from that in the fourth edition (cinchophen still survives, together with trips to Saratoga Springs and Aix-les-Bains); and the section on idiopathic steatorrhœa could be rewritten with advantage. The diagnosis of pancreatic disease, and the rôle of HCl in gastro-enterology, might include more recent work. Doubt could be cast upon the continued advocacy of hexamine in the treatment of cholecystitis. It would be helpful in future editions if suitable selected references were included.

These criticisms, however, are slight compared with the solid worth of the major portions of the book. Treatment is often the textbook's Achilles heel, and in this respect Price is no worse than some and better than many. It will help many candidates for higher examinations (and a few of their examiners). It is well produced, easy to read, and excellent value.

Anatomy for Surgeons

Vol. 2: The Thorax, Abdomen, and Pelvis. W. HENRY HOLLINSHEAD, PH.D., professor of anatomy, Mayo Foundation, University of Minnesota. London: Cassell. 1956. Pp. 934. £7 7*s*.

Professor Hollinshead maintains the same high standard he set in the first volume,[1] which dealt with the head and neck. The second volume is complete in itself, and has the features which made the first so useful—the clear and simple writing, the admirable semi-diagrammatic illustrations, the free use of information derived from other medical subjects to make the anatomy live, the references which follow each section. As before, the terminology is easy to follow. The author has introduced this time many of the terms which were accepted at Paris in 1955 as the basis of a new international terminology; these are based on the B.N.A., and the reader may not notice that any change has taken place.

Each section has been referred to one or more surgical colleagues at the Mayo Clinic for criticism and comment before being rewritten. The contents will be of much value and interest not only to the surgeons for whom it is primarily designed but also to anatomists, who will find much that they may not have thought of in this particular way before.

The book illustrates that surgical anatomy is just anatomy viewed from a different angle: it is not a subject, but an attitude of mind. We warmly recommend this excellent account of anatomy at work.

1. See *Lancet*, 1954, ii, 902.

Psychology of Personality

Six Modern Approaches. Edited by J. L. MCCARY, PH.D., University of Houston. New York: Logos Press. 1956. Pp. 383. $6.75.

THE science of personality is so much in its infancy that it is interesting to have a book written by six authors of widely different approach. The contributions are presented in such a way that they are readily compared. The temptation to oversimplify the study of personality or to overemphasise one particular dimension has been avoided. Perhaps too little space is devoted to a critical examination of the difficulties and defects of the various approaches and their integration. The editor rightly says that none of the approaches, either separately or combined, provides an answer to the problem of personality, but the book is nevertheless a far better contribution to the subject than many which have appeared during the past decade, and it will be welcomed by students of psychiatry and psychology.

The Lung as a Mirror of Systemic Disease

E. H. RUBIN, M.D., New York. Oxford: Blackwell Scientific Publications. 1956. Pp. 288. 95*s*.

IT is hard to imagine the lungs reflecting any disease, but some diseases primarily affecting other systems do have pulmonary manifestations, and it is these that Dr. Rubin describes. The conditions range from rare disorders of metabolism and the collagen diseases to diseases of the skin, blood, and cardiovascular system. Such a book will be used mainly for reference, and it would fail if it were inadequately documented; but the bibliography is, in fact, full and well presented. The chest radiographs are clearly reproduced and meaningful. Both chest specialists and general physicians will find help here.

Children and Sleep (London: Family Health Publications. 1956. Pp. 15. 1*s*. 3*d*.).—Prof. R. S. Illingworth's booklet in the Parent Guidance Series is written for the conscientious, probably overanxious, and often harassed mother of this generation, who has replaced her less well-informed counterpart of thirty years ago. He gives wise and reassuring advice on the avoidance of errors of commission—advice clearly based on first-hand knowledge of the normal child, that attractive creature whose love for his mother is demonstrated by various exacting manifestations. Professor Illingworth's views on the formation of bad habits will be helpful to parents who wonder where the boundary lies between love and indulgence. The booklet deals mainly with bedtime problems, but the 5 A.M. chronic waker is also mentioned—alas as a hopeless case—requiring that one parent should sacrifice himself to the three hours before breakfast, comforted by the thought that "a lot of useful work can be done between 5 A.M. and breakfast," and the assurance that this habit should not persist after three years of age. The booklet is well written, attractively illustrated, and excellent value.

British Encyclopædia of Medical Practice (2nd ed. London: Butterworth. 1956.). *Cumulative Supplement* (Pp. 217. 27*s*. 6*d*.). *Medical Progress* (Pp. 366. 37*s*. 6*d*.). (The two together cost 57*s*. 6*d*.)—Arrangements for these supplements were completed before the death of Lord Horder, and Lord Cohen of Birkenhead, his successor as editor-in-chief, in a foreword modestly describes as "literally nominal" his association with these two volumes which carry his name, though not his new title.

Bone Structure and Metabolism (London: J. & A. Churchill. 1956. Pp. 299. 45*s*.).—The proceedings of the symposium held in July, 1955, by the Ciba Foundation, in coöperation with the Bone and Tooth Society, have been published under the editorship of Dr. G. E. W. Wolstenholme and Miss Cecilia O'Connor, B.SC.

PREDICTABLE *ANTACID THERAPY*

PRODEXIN

1 **rapidly relieves gastric pain**
2 **safely buffers excess acid**
3 **non-alkalising**
4 **non-constipating**
5 **stable, consistent and predictable**

Prodexin tablets provide the advantages of alumina buffer therapy without its disadvantages. The tablets are pleasant to take and when slowly sucked provide antacid control comparable with that obtained by drip therapy. Prodexin, however, unlike milk-alkali regimes, does not aggravate acid secretion.

PRODEXIN

Dihydroxy aluminium aminoacetate...0·9 gm.
Magnesium carbonate.....0·1 gm.

Cartons of 30 singly wrapped tablets.

Dispensing packs of 240 tablets (basic N.H.S. cost 30/4d.)

C. L. BENCARD LTD · PARK ROYAL · LONDON · N.W.10

TABLETS

'PEN-V-SULPHA'

brand

PENICILLIN-V WITH SULPHONAMIDES

Each tablet contains the *EFFECTIVE* oral penicillin, Penicillin-V Lilly, 125 mg. with a total of 0.5 Gm. of Sulphonamides (167 mg. each of sulphadiazine, sulphamerazine and sulphadimidine). This combination is of particular value in mixed infections or where the organism is only moderately susceptible to either agent.

The average adult dose is one tablet four times daily, increased in severe infections.

Tablets 'PEN-V-SULPHA' are available in bottles of 20, 100, 500 and 1,000 scored tablets.

Lilly TRADE MARK

ELI LILLY & COMPANY LIMITED, BASINGSTOKE, ENGLAND

BAYER

The analgesic that is different

Panadol is not a further permutation of the aspirin-phenacetin-codeine formula, but a new substance—N-acetyl-p-aminophenol. It does not cause constipation or gastric irritation, and may safely be given to all patients, even those with peptic ulcer, or where there is sensitivity to other analgesics.

PANADOL

Trade Mark

NO ASPIRIN — no gastric irritation NO CODEINE — no constipation
NO PHENACETIN — no methaemoglobinaemia

Tablets, 0.5 g. N-acetyl-p-aminophenol, in cartons of 20, and bottles of 100 and 500. Basic N.H.S. cost of 24 tablets: 1/11½d.

BAYER PRODUCTS LIMITED, Neville House, Kingston-on-Thames, Surrey

Associated exporting company: WINTHROP PRODUCTS LTD.

THE LANCET
LONDON: SATURDAY, NOV. 10, 1956

Hospital Sterilisers

A PARADOX of the antibiotic era is the increasing attention that has had to be paid in recent years to surgical infections. Many of the infections which used to appear in surgical wards were found to respond to penicillin in its early days, and it seemed that they might soon disappear. Certainly many drug-sensitive organisms (for example, streptococci) have lost much of their sting; but other organisms, such as proteus and *Pseudomonas pyocyanea*, have taken their place, and, worst of all, drug-resistant staphylococci have replaced the drug-sensitive organisms of a few years ago. The misuse of antibiotics is at least partly responsible, but the fact that infections which are not easily treated can still arise makes it all the more important to prevent infection. The source of contamination may be air, beds, bedclothes, baths, utensils, furniture, and patients or staff who are carriers of pathogenic staphylococci; and much has been written about the importance of these causes of failure. Another very obvious source of infection is imperfect sterilisation of dressings and instruments; but surgeons and hospital authorities have often turned a blind eye to the unsatisfactory state of this important operation.

A few writers have drawn attention to the ways in which sterilisation processes may break down,[1–3] but it is only in the past two or three years that alarming increases in infections, especially staphylococcal, have forced more and more hospitals to examine their sterilisation technique. BOWIE, among others, has lately emphasised the shortcomings of much of our apparatus.[4] "About 90 per cent. of the sterilizers in use in Britain's hospitals and pharmacies are obsolete; they include representatives of all developmental stages in design since 1870." It is often true that responsibility for sterilisation is divided, that half a dozen different methods may be used for the same equipment in different parts of the same hospital, and that important procedures are entrusted to unskilled hands. But BOWIE's experience is that failure is more often due to obsolete uncontrollable apparatus than to the careless or inexpert operator. HOWIE and TIMBURY[5] have now produced fresh evidence which fully confirms this view. Laboratory tests were carried out on the efficiency of dressing sterilisers used in five operating-theatres. The test material used consisted of small dressing bags containing spore suspensions of an aerobic spore-bearer dried on filter-paper, swabs contaminated with hospital dust, Browne's indicator tubes, and unsterilised dressing swabs. The test spores and the dust-contaminated swabs were each enclosed in separate soft-paper envelopes, but the unsterilised swabs were not enclosed in envelopes since they were included to see whether loads became contaminated during the drying process after sterilisation. HOWIE and TIMBURY conclude that sterilisation often fails because sterilisers are badly designed or operated (for example, inadequate steam-traps, absence of thermometers in the discharge line, and overpacking of drums) and that, even when sterilisation itself has been effective, contamination may follow the admission of non-sterile air during drying. They point out that laboratory tests by themselves are of limited value and that many of the defects in the design or operation of sterilisers are matters for the engineer rather than the bacteriologist; and some improvements have been suggested in our correspondence columns.[6]

It seems then that there is a great deal wrong not only with our sterilising but also with our sterilisers. Until recently it might have been possible to make light of the whole thing and suggest that serious infections were not very common, and in any case there was no proof that they were caused by the use of improperly sterilised equipment. Such an argument would convince very few people today. From time to time reports appear of surgical infection which can certainly be traced to contaminated dressings, plasters, instruments, or other equipment; and the threat of legal action has stimulated hospital authorities. But one of the main causes of continued inactivity is the fact that we simply do not know how we can fairly apportion the blame for the sepsis which undoubtedly occurs. For one thing there is remarkably little accurate information about the frequency of post-operative sepsis, however caused; figures vary from 3% to 30%—and we may be quite sure that many cases go unreported. It is even harder to assess how often faulty sterilisation can be directly blamed for sepsis. Yet the not so uncommon cases of post-operative tetanus,[7] and the frequent examples of homologous-serum jaundice following the use of contaminated syringes remind us that all is not well with our sterilisation. Every operation and every injection carries the risk of infection, yet only a small proportion of wounds become seriously infected—and we still cannot say what determines the breakdown of tissue defences when the infecting dose has apparently been trivial, or what fortifies them at other times when the dose has been much heavier. This is all the more reason why one possible source of infection should be completely closed by providing sterilisers which sterilise; and this cannot be achieved without correctly designed apparatus and skilful operators. Both of these are bound to be expensive and the cheapest and most efficient way of using them is by concentrating sterilisation in a central supply department under the control of someone who really understands the principles of sterilisation. To leave sterilisation in the hands of unskilled or, perhaps worse, semi-skilled operators, each with their own ideas about the best way of making an inefficient piece of apparatus efficient, is to court disaster. This country is slow to take up the idea of central sterilisation and there is much active opposition to it. But in several other countries central sterilisation is already proving an outstanding success. Instruments sterile up to the moment when the surgeon uses them are things that we can and must provide. The surgeon should expect nothing less and he should make quite sure that the tools he uses are really sterile.

1. Underwood, W. B. Textbook of Sterilization. Chicago, 1941.
2. Perkins, J. J. Principles and Methods of Sterilization. Springfield, Ill., 1956.
3. Walter, C. W. Aseptic Treatment of Wounds. New York, 1948.
4. Bowie, J. H. *Pharm. J.* 1955, **174**, 473, 489.
5. Howie, J. W., Timbury, M. C. *Lancet*, Sept. 29, 1956, p. 669.
6. Northcroft, L. G. *Ibid*, Oct. 13, 1956, p. 790. Brock, R. B. *Ibid*. Bowie, J. H. *Ibid*, Nov. 3, 1956, p. 945.
7. See *Ibid*, July 7, 1956, p. 29.

Treatment of Barbiturate Poisoning

IN this issue we publish four papers describing recent experience at the Bispebjerg Hospital, Copenhagen, in the treatment of acute barbiturate poisoning. They refer particularly to the use of the new drugs bemegride ('Megimide,' N.P.13) and amiphenazole ('Daptazole'). These drugs were introduced in 1954 by SHAW and SHULMAN and their colleagues,[1] who described their action in shortening sleep and restoring consciousness in laboratory animals under the influence of barbiturates. SHULMAN was the first to use these drugs in treating barbiturate coma. He showed [2] that when bemegride was given intravenously in doses of 50 mg. every few minutes (up to a total of about 1 g.), together with about a third of this amount of amiphenazole, barbiturate coma could be converted into what was termed a "safe state." A patient in this state was as though lightly anæsthetised: the pharyngeal and laryngeal reflexes were present, muscle tone was restored, and the pulse-rate, blood-pressure, and respiration returned towards normal; and the dangers of respiratory paralysis and of aspiration of vomit were almost eliminated. By repeating the treatment as required, the "safe state" could be maintained until the ingested barbiturate was dissipated and the patient recovered. SHULMAN's views were criticised and considerable doubt was expressed about the safety of the "safe state." [3] But a succession of case-reports [4–10] illustrated how bemegride could aid the recovery of many seriously poisoned patients; and experienced clinicians believed that many of these patients would have died if bemegride had not been used. On p. 961 Dr. LOUW and Dr. SONNE confirm the value of these new measures. Of 24 patients with severe barbiturate poisoning, 20 were treated with bemegride alone, and the other 4 had amiphenazole with or without bemegride. There were only 4 deaths among the severe cases. Bemegride's action in restoring depressed respiration was particularly striking, and on p. 966 Dr. CLEMMESEN describes how 7 patients with total apnœa responded dramatically to the injection of bemegride and amiphenazole. All but 2 of these apnœic patients recovered.

SHAW [11] remarked that bemegride was no exception to the rule that "almost all drugs in therapeutics when used to excess produce undesirable effects." Vomiting and convulsive movements have been noted after its use; and in another paper this week Dr. KJÆR-LARSEN records the development of a toxic psychosis in 15 out of 50 patients who had been given bemegride as treatment for barbiturate poisoning. These psychoses were benign, but to the patients and their relatives they were ghastly experiences. In the delirious psychotic reaction visual sensations or hallucinations were very common. Impairment of consciousness, suggestibility, anxiety, and insomnia were prominent symptoms. The whole picture resembled that of intoxication due to mescaline or lysergic acid. Psychotic reactions were commonest after large doses of bemegride and in patients who had previously been addicted to drugs. The reaction was apparently not caused by barbiturate withdrawal. Among the same group of 50 patients, 16 had convulsions immediately after an injection of bemegride. Convulsions were commoner in drug addicts and in patients who later had psychoses than they were in other patients.

The Copenhagen workers have also made an important contribution to our understanding of the mode of action of bemegride. Dr. PEDERSEN treated with bemegride 22 cases of poisoning by the barbiturate, 'Allypropymal,' a hypnotic widely used in Denmark; he compared the results with those in 74 other cases of allypropymal poisoning not so treated, and his findings further substantiate the value of bemegride. He also measured the duration of unconsciousness and the blood-barbiturate level on regaining consciousness in these two groups, and no significant difference was found. Dr. LOUW and Dr. SONNE made similar observations and they too observed that the rate of excretion of barbiturate was uninfluenced by bemegride. They were also able to demonstrate the rapid appearance of synchronous activity and increasing amplitude in the electro-encephalogram after bemegride was given to the comatose patient. In many cases spikes appeared in the E.E.G. before any clinical effect was detectable. SHULMAN and his colleagues [2] said that bemegride in therapeutic doses seemed to exert a "direct antagonism" to the offending barbiturate; and SHAW [12] believed that bemegride might be a "specific antagonist to barbiturate." This view was supported by HOLTEN,[13] who pointed to the absence of signs of central stimulation in his patients who received bemegride for barbiturate poisoning; this seemed to indicate that "a true antagonism of bemegride to barbiturates" was the main factor in the drug's action. The new evidence produced by Dr. LOUW and Dr. SONNE makes it plain that bemegride is a central stimulant in patients who have taken large doses of barbiturate. This action is manifest in the reflex hyperactivity, the E.E.G. changes, and the convulsive and psychotic disorders. They argue that these changes make it unlikely that bemegride acts by competitive inhibition of barbiturate, in the way, for example, that nalorphine does in morphine poisoning. If bemegride worked by competitive inhibition, it might be expected that the patients would regain consciousness despite a high blood-level of barbiturate; but this is not so. The central stimulant action of bemegride differs from that of both picrotoxin and amphetamine, but the present evidence favours the view that bemegride acts primarily by central stimulation rather than by specific biochemical antagonism. It would be interesting to know what bemegride can do in comas other than barbiturate; but there are difficulties in the way of obtaining such information in human studies. Whatever its mode of action, there is no doubt that bemegride is a valuable advance in the treatment of barbiturate coma. The place of amiphenazole is less well defined, but it does seem to be less toxic than

1. Shaw, F. H., Simon, S. E., Cass, N. M., Shulman, A., Anstee, J. R., Nelson, E. R. *Nature, Lond.* 1954, **174**, 402.
2. Shulman, A., Shaw, F. H., Cass, N. M., White, H. M. *Brit. med. J.* 1955, i, 1238.
3. Wright, J. T. *Lancet*, 1955, i, 1328.
4. Bingle, J. P., Whitwam, J. G. *Brit. med. J.* 1955, i, 1341.
5. Webb, J. W. S. *Ibid*, 1955, ii, 56.
6. Buckman, J. *Ibid*, p. 203.
7. Perinpanayagam, M. S., Nicholls, G., Osmond, J. D. *Ibid*, p. 912.
8. Perinpanayagam, M. S. *Lancet*, 1955, ii, 620.
9. Hurdle, A. D. F., Lane, B. K. *Ibid*, 1956, i, 836.
10. Mechie, A. M. *Scot. med. J.* 1956, i, 297.
11. Shaw, F. H. *Lancet*, 1955, ii, 144.
12. Shaw, F. H. *Ibid*, 1955, i, 969.
13. Holten, C. *Ibid*, 1955, ii, 619.

bemegride. The fact that these drugs are now available does not alter the prime importance of orthodox methods of treating the comatose patient. Increasing experience, to which the Copenhagen workers have notably contributed, will define the exact place of these drugs in the treatment of barbiturate poisoning.

Hormones of the Adrenal Medulla

FOR many years adrenaline was accepted as the only hormone of the adrenal medulla and also as the sympathetic chemotransmitter. There were discrepancies between its actions and those of the sympathetic nervous system, but these were explained in various ways. It seemed that the adrenal medulla was a simple gland which made one hormone. Noradrenaline was synthesised in 1904, but it was only ten years ago that it was recognised as a natural product of the animal body; and VON EULER [1] pointed out that it fitted the rôle of sympathetic transmitter far better than adrenaline. Though evidence has come from many quarters to support this idea, this does not mean that adrenaline is merely a step in the manufacture or breakdown of noradrenaline: it has functions in its own right. Anatomically there are two kinds of secreting cells in the adrenal medulla, one of which gives the reactions for adrenaline and the other for noradrenaline. Thus, we now believe that the adrenal medulla makes two hormones. It is not easy to determine just when and how the two hormones are liberated and what is their exact place in health and disease. The first necessity, therefore, was to develop accurate and sensitive methods of assay for the two substances either singly or together in biological fluids. Methods are now available, but they need skill and caution in their use and interpretation. Fortunately the quantities of the two substances appearing in the urine usually seem to bear a direct relation to the amounts produced or injected. The adrenaline originates in the adrenal medulla and noradrenaline both from the medulla and the sympathetic nerve-endings. Under controlled conditions the adrenaline/noradrenaline ratio in the medulla is fairly constant and the ratio is typical for a given species. In the fœtus and young infant the accessory organs of Zuckerkandl make relatively large amounts of noradrenaline, but after birth their activity declines and that of the adrenal medulla develops. Moreover, throughout life there are a number of chromaffin cells in various organs and nerve ganglia which make amines similar to, or the same as, adrenaline and noradrenaline. The rôle of this scattered accessory tissue is uncertain, but it may be concerned with modifying the response of end-organs to another chemotransmitter—namely, acetylcholine.[2–5]

Thanks to the reliable assay methods, information is beginning to accumulate about the physiological and pathological conditions under which the excretion and probably the production of adrenaline and noradrenaline varies. In general terms, noradrenaline is always vasoconstrictor whereas adrenaline is vasodilator in some regions. It is interesting that adrenaline can exert its own specific action even in the presence of high concentrations of noradrenaline,[6] and this is what seems to happen in exercise. Adrenaline dilates the muscle vessels and the simultaneously produced noradrenaline prevents a fall of blood-pressure by inducing vasoconstriction elsewhere. Another difference between the two amines is that adrenaline is far more active in stimulating metabolism than is noradrenaline. The considerable glycogenolysis produced by adrenaline can be equalled only by amounts of noradrenaline sufficient to cause serious circulatory disturbance. Since both adrenaline and noradrenaline have particular functions, it seems likely that there is a selective mechanism for controlling their output from the medullary cells. In some animals it can be shown that stimulation of peripheral sensory nerves reflexly changes the ratio of adrenaline to noradrenaline in adrenal venous blood, and so does stimulation of different points in the hypothalamus. There is also a clear relationship between hypoglycæmia and an increase in the output of adrenaline in relation to noradrenaline.

It follows that certain pathological states could be due to lack or excess of either hormone or to a disturbed response to their presence. Considering the normal first, noradrenaline released from the medulla as well as from the peripheral vasomotor nerve-endings is important in vascular adjustment to changes of posture. In standing, if there were no arteriolar vasoconstriction, especially in the lower limbs, the capillaries of the feet would be subjected to a pressure of over 100 mm. Hg (the arteriolar pressure plus that due to the weight of the column of blood above the feet). Massive œdema would result and the venous return to the heart would fail. SUNDIN [7] has measured the urinary output of adrenaline and noradrenaline in healthy people when supine and when tilted to various angles from the horizontal, and compared it with the hormone output under similar conditions in patients with orthostatic hypotension and in others with hypertension. In health there was only a slight fall in systolic and diastolic pressures and moderate increase in pulse-rate and also a small rise in both adrenaline and noradrenaline excretion which varied directly with angle of tilt. The increased noradrenaline excretion was concerned in adaptation to posture change and appeared at a smaller angle of tilt than the increase in adrenaline, which was related to the slight discomfort felt by the subjects. Patients with orthostatic hypotension showed a greater fall of systolic pressure and rise of pulse-rate than the normals, but their excretion of adrenaline and noradrenaline was not significantly different. Thus, the reason for the failure of the blood-pressure homœostatic mechanism in these cases remains unknown: the reflex mechanism may have been faulty or the arterioles refractory to the noradrenaline released. These results differ from those of LUFT and VON EULER, whose patients showed a very low daily output of noradrenaline and no rise in pulse-rate accompanying the fall in systolic and diastolic pressure.

SUNDIN also found that when hypertensive patients were lying down their urinary loss of adrenaline and noradrenaline was within normal limits. When they

1. von Euler, U. S. Noradrenaline. Springfield, Ill., 1956.
2. Bülbring, E., Burn, J. H. *J. Physiol.* 1939, **97**, 250.
3. Bülbring, E., Burn, J. H. *Ibid*, 1942, **101**, 289.
4. Luco, J. V. *Amer. J. Physiol.* 1939, **125**, 196.
5. Marrazi, A. S. *J. Pharmacol.* 1939, **65**, 395.
6. de Largy, C., Greenfield, A. D. M., McCorry, R. L., Whelan, R. F. *Clin. Sci.* 1950, **9**, 71.
7. Sundin, T. *Acta med. scand.* 1956, **154**, suppl. 313.

were tilted, however, there was a big fall in systolic pressure with a relatively small diastolic change; and they excreted far less noradrenaline than normal controls in similar conditions. This difference did not seem to be due to poor renal function. A possible explanation is that because of the high average carotid-sinus pressure the baroreceptors were little stimulated during tilt and hence there was an insignificant reflex stimulation of the sympathetic nervous system. In all conditions the hypertensives excreted adrenaline in similar amounts to normal people. Other workers, too, have concluded that it is not possible unequivocally to implicate noradrenaline, any more than renin, in the production of essential hypertension, since they too found in most cases a normal range of excretion of adrenaline and noradrenaline. Thus, so far, only in phæochromocytoma and in some cases of renal hypertension has it been possible to show that an endogenously produced chemical is responsible for hypertension. In phæochromocytoma the urinary output of adrenaline is normal, but of noradrenaline is greatly increased; and, moreover, the urinary concentration of the two reflects that found in the tumour.

The best therapeutic uses of adrenaline and noradrenaline are being slowly worked out. It would be particularly helpful to have a clear guide to the best way of dealing with states of low blood-pressure accompanied by anuria. Would the administration of noradrenaline, which constricts renal blood-vessels, improve matters or make them worse? Probably, if the general blood-pressure can be improved, the renal circulation will benefit.

Annotations

FINISHING THE JOB

THE arrangements this country has made for helping the disabled are in many ways a model; and we do well to be proud of them. If the Piercy Committee [1] had had fewer official members its report, though perhaps less well informed, might have put rather less emphasis on the merits of these arrangements and rather more on the ways in which they often fail to work. (The impression left by the studies of Professor Ferguson and his colleagues in Glasgow is certainly less reassuring, whether they are talking about the fate of disabled young people [2] or about the return of hospital patients to employment.[3] Another disquieting report was that of Mrs. Sharp, who, in surveying the social problems of the young disabled in Kent, found herself obliged to turn aside from her investigation and supply some of the help they so clearly lacked.[4]) But, as regards the medical contribution to reablement, the Piercy Committee certainly does not suggest that there is no room for improvement. While recognising that in the past decade the concept of rehabilitation has widened and deepened on the medical side, it points out that this major development still has much way to make in practice. Both the British Medical Association and the British Association of Physical Medicine said that consultants and general practitioners alike remain slow to consider the rehabilitation needs of their patients, and the committee "trusts that all possible steps will be taken by medical schools, and by the medical profession generally, to bring home to doctors their responsibility for leadership in this field."

The B.M.A. spoke of the unsatisfied need of many patients for "planned convalescence" of an active kind, provided either by daily attendance at clinics or by living at a special centre; and hospital boards are asked to review their arrangements. But when all has been done that the hospital service can do, and the patient still has a residual disability, the hospital staff have not completed their task until they have assessed his probable capacity, recommended any further measures of reablement or training, and ensured that he is in touch with those who will be able to help him. A few patients present special difficulties, and for these a small number of hospitals have instituted "resettlement clinics," which in their most comprehensive form are conferences at which a senior member of the hospital staff presides and those present include the consultant in charge of the case, a general practitioner with knowledge of local industry, the physiotherapist, the occupational therapist, the almoner, and the disablement resettlement officer. The Piercy Committee thinks that a clinic of this kind should be a normal feature of the work of all major hospitals, "meeting regularly, and dealing not only with patients ready for discharge from that hospital, but also with those from neighbouring smaller hospitals and those referred from other sources." The "other sources" include local practitioners, and the committee is much concerned that the family doctor should set the right tone from the beginning of the process of rehabilitation; for "if there is ignorance or indifference among the profession the whole process will be vitiated."

Though written in anything but dramatic language, the Piercy report is one more appeal to us to treat people not diseases. The effect of illness on people's life and work usually matters more to them than the illness itself.

1. Including the chairman, Lord Piercy, this committee had 13 members, of whom the two doctors (Sir Claude Frankau and Dr. C. Gaulter Magee) were representatives of the Ministry of Health and the Ministry of Pensions and National Insurance. Its report is summarised on p. 986.
2. Ferguson, T., MacPhail, A. N., McVean, M. I. Employment Problems of Disabled Youth in Glasgow. Medical Research Council memorandum no. 28. H.M. Stationery Office, 1952. See *Lancet*, 1952, ii, 120; *Ibid*, 1953, ii, 610.
3. Ferguson, T., MacPhail, A. N. Hospital and Community. London, 1954. See *Lancet*, 1954, i, 1225.
4. See *Lancet*, 1954, ii, 1062.

SPREAD OF BRONCHIAL CARCINOMA

EXPERIENCE has shown that small bronchial tumours, apparently well circumscribed and usually regarded as "early," may give rise to blood-borne or lymph-borne metastases. Further knowledge of how such tumours spread might make us think again about surgical excision as the treatment of choice. Nohl [1] has lately studied pneumonectomy and lobectomy specimens from 100 patients with carcinoma of the lung and he took special note of lymphatic pathways and vascular involvement. Each lung was dissected in the fresh state, and the lymph-nodes were charted on a diagram and then examined microscopically. An average of 7·5 lymph-nodes per specimen was thus examined. (In a previous investigation, Borrie [2] found an average of 5 nodes per specimen.) Similarly, portions of pulmonary vein and of pleura that were thought to be invaded were examined histologically. Lymph-nodes were involved in 88·8% of pneumonectomies and 41·4% of lobectomies—an over-all involvement of 75%. This is higher than the figure recorded by seven other authors, including Brock and Whytehead,[3] who stated that 30–40 lymph-nodes per specimen were examined and that lymph-nodes were involved in 38% of cases in which "radical" pneumonectomy had been performed.

Nohl has made a determined attempt to unravel the lymphatic pathways by which metastases from growths in various segments and lobes spread towards the hilar and mediastinal lymph-nodes. He concluded that in most cases the primary growth had involved more than one

1. Nohl, H. C. *Thorax*, 1956, **11**, 172.
2. Borrie, J. *Ann. R. Coll. Surg. Engl.* 1952, **10**, 165.
3. Brock, R., Whytehead, L. L. *Brit. J. Surg.* 1955, **43**, 8.

segment, and therefore only the lobar drainage could be assessed with accuracy. There was a constant lobar lymphatic drainage, the tendency being for lower-lobe as well as upper-lobe growths to metastasise upwards. The indications were that right upper lobectomy needed wider glandular clearance than left. Walls of large blood-vessels were seldom infiltrated by growth, though the perivascular lymphatics might be invaded and thus provide a pathway for blood-borne spread.

Nohl describes a surgical pathological classification, based on Salzer's [4] method, and taking into account the extent of the growth and the lymphatic and vascular involvement. The use of such a scheme might make it possible to compare the operative results of different surgeons and to form a more accurate prognosis. It could also be used to study the behaviour of different histological types of growth. The histological classification used by Nohl is unusual, in that he records only 3% of oat-cell tumours, but 59% of squamous carcinomas. Agreement on the definition of microscopical appearances is the first essential in such a surgical-pathological classification.

It has to be admitted that the results of lung resection for carcinoma are seldom more than palliative. The experience of many pathologists is that the extent of local and glandular spread of lung carcinoma is not a reliable guide to prognosis. Such investigations as Nohl's are valuable, but they can be carried out only after the operation is over and the surgeon must still make as effective a clearance as he can with no other guide but his own experience of the disease in situ.

PARTIAL NEPHRECTOMY

IT seems very reasonable to leave behind healthy tissue, if possible, when operating on a diseased kidney. Czerny thought so 80 years ago, and he in fact performed partial nephrectomy many times experimentally and in man. He and his contemporaries, however, met with many difficulties, and the operation was virtually abandoned because of the postoperative complications of massive hæmorrhage, urinary fistula, infection, and atrophy of the remaining kidney tissue. It was also claimed, probably unjustly, that when two kidneys were present the healthy one would do all the work and the remaining part of the resected kidney would atrophy—a so-called "counter-balance." But after the late war many centres rekindled interest in partial nephrectomy, which is now widely practised, particularly in Scandinavia and elsewhere on the Continent.

For several reasons the operation can now be performed with little risk: diagnosis is more precise, thanks to such techniques as renal angiography [5]; the urinary tract can be readily sterilised; the surgical anatomy of the renal vasculature [6] is better understood; and the use of general and local hypothermia has eased the surgeon's task. Semb,[7] whose experience in this field is probably unrivalled, has recently reviewed 226 partial resections, 160 of which were performed for tuberculosis, often in a single functioning kidney. This indication for the operation will no doubt decrease because of the excellent results of chemotherapy in renal tuberculosis. The remaining patients had hydronephrosis, local cysts, renal calculi, or congenital malformations. An excellent exposure for this operation is achieved through a subthoracic incision with resection of the anterior part of the eleventh rib: the whole kidney and its pedicle can then be displayed by extraperitoneal reflection. A bloodless field facilitates the definition and dissection of the intrarenal structures, and this can be obtained most readily by clamping the renal vessels either continuously or intermittently. It is not yet clear how long such ischæmia can be maintained without serious damage to the tubules. In a patient whose renal vessels were occluded for 50 minutes renal function was upset for many weeks, resulting in oliguria and a raised blood-urea. Even clamping for 10–20 minutes was followed by some reaction. The selective cooling of the kidney to 5–10°C may overcome some of these difficulties, because under these conditions dogs can withstand clamping of the whole pedicle of one kidney for $7^1/_2$ hours and regain normal renal function.[8] Detailed observations have not been recorded in humans.

The ramification of the renal arteries and veins outside the kidney is very variable, but within the renal parenchyma the course of the interlobar vessels seems to be more constant. In a partial nephrectomy, these vessels are exposed by an incision into the anterior kidney wall down to the sinus, where the small branches to the part to be resected are individually ligated. The calyces are isolated, cut separately, and closed by a double catgut suture. The sutured stump is dropped free into the loose tissue of the sinus, where it is covered with connective tissue and fat—in the same sort of way as a bronchial stump is closed. The edges of the kidney substance can then be pulled together by a double row of crossed catgut sutures.

Semb's immediate results are admirable: no deaths, fistulæ, or hæmorrhage, and only 2·6% of wound infections. Postoperative follow-up indicated that the remaining renal tissue was working satisfactorily. Although it is unlikely that the experience with partial nephrectomy in other centres has been so encouraging as this, Semb has demonstrated that if sound anatomical and pathological principles are followed the kidney is well suited to local surgery. Czerny's 80-year-old operation has become established and safe.

PHAGE-TYPING

A RECENT paper by Anderson and Williams [9] describes the techniques used in phage-typing, and gives a few examples which illustrate the value of this refinement of bacterial identification or "epidemiological fingerprinting." Laboratory workers will appreciate the scientific quality of this excellent paper, but the wealth of technical detail may discourage not only clinicians but even many bacteriologists, so it may be useful to point out some of the data that are of more general importance.

Few laboratories need to do phage-typing of either enteric organisms or staphylococci, and not many have the staff or the time that it requires. Special reference laboratories, where this phage-typing is carried out, have been established within the Public Health Laboratory Service, and most hospital laboratories have learnt to appreciate the help that is available and freely given: but the real benefit of this service is felt all over Britain by medical officers of health and other epidemiologists. Anderson and Williams emphasise the value of collecting material from the whole country into one centre: the appearance of a single phage-type is then quickly detected and the necessary epidemiological investigations can be made.

Phages are viruses which can cause lysis of certain organisms, and they have been adapted so that they lyse only particular strains of a single bacterial species: using these phages, it has been possible to divide into phage-types, *Salmonella typhi*, *Salm. paratyphi B*, *Salm. typhimurium*, *Shigella sonnei*, and *Staphylococcus aureus*. In a single epidemic all the strains of the causative organism that are found in patients, carriers, contaminated food, or fomites will belong to the same phage-type. The phages that are used for typing *Salm. typhi* have been derived from one parent phage, Vi phage II; and these phages have been specifically adapted to inter-

4. Salzer, G. *Wien med. Wschr.* 1951, **101**, 102.
5. Riches, E. W. *Brit. J. Surg.* 1955, **42**, 462.
6. Graves, F. T. *Ibid*, 1954, **42**, 132; *Ibid*, 1956, **43**, 605. See *Lancet*, Aug. 4, 1956, p. 241.
7. Semb, C. *Ann. R. Coll. Surg. Engl.* 1956, **19**, 137.
8. Birkeland, S., Vogt, A., Krog, J., Semb, C. Abstracts of 20th International Physiological Congress. Brussels, 1956; p. 98.
9. Anderson, E. S., Williams, R. E. O. *J. clin. Path.* 1956, **9**, 94.

nationally recognised Vi types. The phages used for typing *Salm. paratyphi B* have not been derived from a single source, and the phage-types of this organism are determined by distinct reaction patterns with a number of phages of *Salm. paratyphi B*. This method is also internationally standardised and although it may not be as elegant as that used for *Salm. typhi* the results are equally reliable.

International collaboration has shown that certain phage-types are more common outside Britain, and Anderson and Williams illustrate how such knowledge allowed the quick recognition of the possible source of an infection, or directed a search towards those who had visited areas where the particular phage-type was known to be present.

When a non-lactose-fermenting colony has to be identified it is usual to subculture a single colony. In Britain if a salmonella is identified it is sent to a salmonella reference laboratory so that its identity can be checked: should it prove to be a strain of *Salm. typhi* or *Salm. paratyphi B* it is then passed on to the Central Enteric Reference Laboratory for phage-typing. Anderson and Williams make it clear that a subculture of a single colony may not provide suitable material for phage-typing. They point out that a strain of *Salm. typhi* must possess the Vi antigen before it can be phage-typed, and that a mutation from the Vi-positive to the Vi-negative state can occur rapidly in vitro. If a bacteriologist suspects that he has isolated either *Salm. typhi* or *Salm. paratyphi B* he should prepare a pooled subculture of 12 colonies from the primary platings, because a week or so later it may be difficult to isolate the organisms from the patient and none of the original plate cultures are likely to be available. If the subculture of the single colony cannot be phage-typed, the pooled culture of the 12 colonies will be available for typing.

The phages used to type the staphylococci have not been derived from a single source, and a great many different patterns have been obtained with the set of phages generally used. Some codification has been possible, however, by the recognition of several principal lytic groups, although in epidemiological investigations it is not sufficient to classify staphylococci into the three main broad groups. Careful in-vitro studies showed a practically identical pattern of susceptibility on successive replicate examinations; more variation in pattern has been found in epidemiological studies of extensive and long-continued outbreaks; but two similar strains are considered different only if one of them is strongly lysed by two phages which fail altogether to lyse the other. Particular phage-types are more or less characteristic of some diseases: nearly all of those found in outbreaks of enterotoxic food-poisoning in Britain belong to the broad group III, although it is not possible to judge the likelihood of a group-III staphylococcus producing an enterotoxin.

The phage-typing of staphylococci has provided unequivocal evidence that hospital cross-infection with staphylococci is widespread and is largely responsible for the many antibiotic-resistant strains among hospital patients, especially in maternity and surgical wards. When staphylococci in a wound apparently develop resistance to penicillin, they also change in type, which means that there has been cross-infection of the wound.

Phage-typing the staphylococci from the noses of the staff, the lesions of the patients, and the fomites will often indicate how the epidemic can best be handled. Many of these outbreaks are small, and often little action is taken unless there is a dramatic or serious epidemic: it is only too easy to ignore the challenge of these small episodes of cross-infection. Now that the phage-typing of staphylococci can be carried out relatively easily by the Public Health Laboratory Service, more use should be made of it to examine the safety of long-accepted ward routines. We hope that Anderson and Williams's paper will prompt hospitals to investigate any episode of cross-infection more fully and take steps which will prevent its repetition.

THE ANATOMY OF EMOTION

IN 1937 Papez [1] said: "emotion is such an important function that its mechanism . . . should be placed on a structural basis." As a contribution towards this he put forward his view that the hypothalamus, anterior thalamic nuclei, cingulate gyrus, and hippocampus, and their interconnections, constituted an integrated mechanism for emotional experience and expression. At the time these views were regarded as purely speculative; but since then experimental work and clinical experience has done much to confirm them. In 1949 MacLean [2] pointed out the part played in primitive emotional expression (and presumably experience) by the hippocampus and amygdaloid complex in the medial aspect of the temporal lobe, and coined the phrase "visceral brain" for these areas. Since that time the results of extirpation and stimulation in animals and the study of discharging lesions in man have extended the visceral brain to the anterior and inferior parts of the temporal cortex and the orbital frontal areas. In operative and electrical exploration of epileptogenic foci Penfield and Jasper [3] have demonstrated spike discharges in the temporal regions associated with clinical attacks involving fear, fright, sadness, and other emotional experiences, and have at times reproduced them by stimulation. Williams [4] has now analysed 100 cases of clinical epilepsy in which emotion was experienced as a part of the fit. He selected only cases in which the emotion could be regarded as ictal rather than as a secondary reaction to the seizure. He grouped all such emotion under the headings fear, depression, pleasure, and unpleasure (and a possible group of anger-aggression, which is not considered in his present paper). Using the electro-encephalogram, the clinical "march" of the seizure, and occasionally the demonstration of a local structural lesion as evidence for site of discharge, he concluded that fear involved the anterior half of the temporal lobes, pleasure-unpleasure was associated with a posterior-temporal location, while in depression discharges were more diffusely distributed in the temporal areas. Allowing for difficulties in localising the site of discharge, these findings agree broadly with the experimental definition of a "visceral brain"; and the seizures commonly contained some visceral or vasomotor element in addition to the emotional one.

Usually the location in the cortex of an epileptic discharge is taken to indicate the cerebral site of origin of the clinical content of the attack; this content is therefore considered to be "represented" in the cortex concerned both by the abnormal discharge and by its normal physiological function. Such a view has undoubtedly produced great advances in our knowledge of cerebral localisation; but it is not beyond criticism. The discharge almost certainly involves both other cortical areas and subcortical structures, and may even originate in some area other than that from which it is most readily recorded. Quite apart from the semantic difficulty of defining "representation," therefore, the possibility of interpreting localisation too rigidly should be borne in mind, especially in dealing with such a complex and diffuse experience as emotion.

THE next session of the General Medical Council will open on Tuesday, Nov. 27, at 2.15 P.M., when Sir DAVID CAMPBELL, the president, will deliver an address. The Medical Disciplinary Committee will meet on Wednesday, Nov. 28, at 2 P.M.

1. Papez, J. W. *Arch. Neurol. Psychiat.* 1937, **38**, 725.
2. MacLean, P. D. *Psychosom. Med.* 1949, **11**, 338.
3. Penfield, W., Jasper, H. Epilepsy and the Functional Anatomy of the Human Brain. London, 1954.
4. Williams, D. *Brain*, 1956, **79**, 29.

Special Articles

INDUSTRIAL REHABILITATION OF MENTAL PATIENTS STILL IN HOSPITAL

MAXWELL JONES
C.B.E., M.D. Edin., M.R.C.P.E., D.P.M.
DIRECTOR, SOCIAL REHABILITATION UNIT, BELMONT HOSPITAL, SUTTON, SURREY

MUCH has been written about the importance of occupational and work therapy in mental hospitals.[1] Few people, however, know about the facilities enabling suitable patients to work in factory-like conditions at the industrial rehabilitation units (I.R.U.) of the Ministry of Labour and National Service while they are still inmates of psychiatric institutions.

Industrial Rehabilitation Units

The I.R.U.s are intended to bridge the gap between the hospital or other active treatment and the factory or other employment, and are available to people handicapped either physically or mentally. To quote the official handbook[2]:

"In the process of rehabilitation, a distinction may be drawn between that part in which the medical aspects are of major importance and that later part in which resettlement and employment become the predominant interest. It is usually necessary for the medical part to have made some progress before it is possible to concentrate on the problems of resettling the patient in employment. A further distinction is that industrial rehabilitation is directed to the preparation of a disabled person for the performance of a normal day's work under ordinary industrial conditions, and not to the remedying of specific disabilities."

The I.R.U.s have taken work therapy a good deal further than had ever been attempted before on a large scale. The moment he sets foot in an I.R.U. the patient no longer lives in the protective atmosphere of a hospital but feels himself to be back in a working environment. Patients are put into dungarees immediately after the unit medical officer—who works part-time at the unit and is usually an experienced industrial doctor—has examined them to determine what physical effort each is capable of; what daily periods of rest will be needed by, for example, those recovering from tuberculosis; what muscles need to be exercised by orthopædic patients; and what specific strains should be avoided both in the workshop and in the gymnasium by others. Each patient is then allocated to the workshop that seems most appropriate for him and spends the next eight to twelve weeks there—apart from daily periods spent in the gymnasium under a Pinderfields-trained remedial gymnast.

During the first few days of his stay in the unit each patient is interviewed successively (1) by the unit's industrial psychologist, who can change the work initially allocated; (2) by the social worker, who takes any action that may be necessary to clear up home difficulties and to relieve anxiety due to debts, &c.; and (3) by the disablement resettlement officer, who takes careful note of the patient's past employment record and, in due course, advises him of any opportunities for employment.

In the average I.R.U. there are six different workshops These are equipped with up-to-date power-driven machinery, with hand tools, and with hand-operated and foot-operated presses, of a type likely to be found in the average engineering shop or factory or industrial establishment outside, and each workshop is under the supervision of a skilled instructor who has had many years' experience in teaching disabled persons. In the workshops ex-patients not only get praise and encouragement from the instructors as and when this is due; they also get inspiration from the example of other disabled persons who have already begun to overcome initial difficulties. In all probability it is this latter feature of life in the I.R.U. workshops that contributes more than anything else to the successes achieved.

At regular points during the patient's progress through the course the entire team, including the medical officer, meet in case-conference to advise on the next step. Often this is a change of workshop to test some hitherto unsuspected aptitude which the industrial psychologist thinks the patient may possess. At the end of the course the case-conference makes a detailed recommendation for the man's future resettlement.

It is the sense of purpose behind the tasks in the workshops, and the fact that working-hours are spent in an authentic industrial atmosphere (complete with clock-punching) that do most to restore the ex-patient's confidence in himself. When he has successfully faced industrial conditions in the I.R.U. he knows that he can face industrial conditions outside; and the physical as well as the mental condition of many patients improves rapidly the moment this truth dawns on them.

The Ministry of Labour and National Service opened its first I.R.U. at Egham, Surrey, in 1943. This was, to some extent, experimental, and the experience gained was of considerable value when new units were provided. Fourteen other I.R.U.s have now been set up, most of them sharing premises with a Government training centre: these are at Birmingham, Bristol, Cardiff, Coventry, Edinburgh, Felling-on-Tyne, Glasgow, Hull, Leeds, Leicester, Long Eaton, Manchester, Sheffield, and Waddon (Croydon). Egham is a residential unit providing 200 places; there are places for 100 at each of the other units, of which Leicester is partly residential and the remainder are non-residential. Both men and women are accepted at all units. The length of stay at an I.R.U. varies from six to twelve weeks, and every effort is made to place all rehabilitees in work or a trade training at the completion of their course. All types of medical disability are dealt with. In 1955 the number of mental defectives admitted to all I.R.U.s was 130 (1%), psychotics 323 (3%), and psychoneurotics 1150 (12%). All other medical categories totalled 8287.

Rehabilitation of Mental Patients

An experiment has been going on for the past few years in accepting, for day-time I.R.U. courses, selected mental patients who are still under treatment in psychiatric institutions. Under this scheme 208 inmates of twenty-nine mental hospitals, psychiatric clinics, and colonies for mental defectives attended eight I.R.U.s during the three and a half years up to Dec. 31, 1955. By the end of 1955, 9 patients were still attending, 154 (77%) of the remaining 199 had completed their rehabilitation course, and 45 (23%) had prematurely finished attending. Though this last percentage is greater than the average for all the entrants to the fifteen I.R.U.s during the same period, 17% of whom left prematurely, the difference can hardly be considered statistically significant. Of the 154 who completed the courses 130 (84%) were placed in either employment or training. An exactly comparable national placing percentage is not available; for, in counting the national percentage, only placings made within three months of completion of the rehabilitation course are used, whereas the figures cited above include some placings made more than three months after completion of the course. It is fairly certain, however, that the figures would not be better than 84%, because the national percentage (excluding placings

1. See articles recently published in *The Lancet* under the heading In the Mental Hospital. (Reprints of this series are now obtainable from *The Lancet*, 7, Adam Street, Adelphi, London, W.C.2, at 2s. 6d., postage 4d.—ED. L.)
2. Ministry of Labour and National Service. Services for the Disabled. H.M. Stationery Office. 1955.

over three months) from mid-1952 to the end of 1955 was 77%.

Follow-up studies six months after the patients had left the I.R.U. show that, of the 154 persons who had completed the course, 25 were not yet due for a six-month follow-up; 25 could not be traced, were dead, or did not reply to the follow-up; 4 were unplaced and were not followed up; 2 had abandoned training; 1 was employed but was not doing well; and 29 were either sick or unemployed. (Of this last group 19 had returned to the mental hospital from which they came.) This leaves 64 (of the original 154 persons) who are known to be satisfactorily employed and 4 who were still in training but known to be doing well. Thus 65% of the 104 patients who completed the course and whose circumstances six months afterwards are known appear to be doing well, and this compares favourably with the national figure for 1955 (67%).

This means that, of 100 mental patients sent to I.R.U. under the arrangements described here, 77 completed the course, and 51 were found to be satisfactorily resettled, when followed up six months after they had been placed in employment or training. These figures may be compared with the national figures for 1955, when of every 100 entrants to an I.R.U. 83 (all medical categories, including psychiatric) completed courses, and after six months 56 were found to be satisfactorily resettled.

The breakdown of these figures is of interest. Of the present 208 patients 81 were referred as psychoneurotic, 75 as psychotic, and 52 as mentally defective.

The *mental defectives* were the most successful individual category dealt with. Premature terminations (14%) were only about half those of the two other categories (26%); placings were as high as 93% of completions; and 68% of those followed up and traced were satisfactorily resettled after six months.

Psychotics, including patients with manic-depressive states, schizophrenia, and paranoia, were next in order of success. Premature terminations were 25%, which contrasts with 17% for all rehabilitees; 87% were placed in either employment or training; and 71% of those followed up and traced were satisfactorily resettled.

Psychoneurotics were third in order of success. Premature terminations were 26%; those placed in employment or training 75%; and 59% of those followed up and traced were satisfactorily resettled.

From these figures there seems to be an excellent case for referring selected mental defectives and psychotics while still in hospital, to I.R.U.s to prepare them for the kind of work environment that they will meet when they leave hospital if they are capable of rehabilitation to an outside work situation. Even in the least satisfactory group (the psychoneurotics) the results obtained seem to justify placement in an I.R.U. The psychoneurotics include patients with character defect—e.g., psychopathic personalities—who are notoriously difficult to rehabilitate to an ordinary work rôle.

Discussion

There is a growing awareness in hospital practice generally of the need to extend treatment to include resocialisation of the patient so that he achieves the best possible adjustment to both work and domestic life. This need is perhaps even greater in psychiatric than in other medical practice, because patients tend to be ill longer and so get out of the habit of work. In addition mental patients often have personality difficulties which make adjustment to work even harder than it is with a purely physical handicap. There is also the attitude of the employer and the workmates to consider; and on the whole society still finds it easier to accept a physically disabled person than one with a mental disability.

The Ministry of Labour and National Service, through the provisions of the Disabled Persons Employment Act, have made a unique contribution in the sphere of vocational rehabilitation and have enabled treatment to be carried to the stage of an ultimate work adjustment. This they have achieved by maintaining close collaboration with the medical profession and thus facilitating an easy progression from medical treatment and rehabilitation to outside employment.

The vast majority of patients attending the fifteen I.R.U.s in Britain have already left hospital or have been treated either by hospital doctors, as outpatients, or by their family doctors. However, it was felt that there were some cases in the field of psychiatry and mental deficiency where the course of industrial rehabilitation might with advantage be started while the patient was still in hospital. The selection of patients was wisely left to the doctors treating them, in collaboration with the officials of the Ministry of Labour and National Service—particularly those associated with the I.R.U. in the locality of the hospital. No standard procedure was adopted, but each area was encouraged to develop a procedure agreeable to the personnel involved. Daily transport to the I.R.U. has to be laid on by the hospital and is practicable only where hospitals are within reasonable distance (say ten miles or so) of the nearest I.R.U.

The results of the scheme to date indicate that patients selected in this way have almost as good prospects of satisfactory resettlement as have the other patients attending the I.R.U.s, mostly for medical and surgical conditions. So far only twenty-nine mental hospitals, psychiatric clinics, and colonies for mental defectives have made use of these facilities, but it is to be hoped that publicity will encourage more institutions to use this promising means of rehabilitation.

I am grateful to various members of the Ministry of Labour and National Service, especially Mr. Paul Goldberg, C.B.E., for guidance and help in writing this paper.

THE DISABLED

Report of the Piercy Committee

MOST of the present arrangements for helping the disabled to work are based on a report by the Tomlinson Committee in 1943. The years since then have seen a big development in social services, and the Piercy Committee,[1] instead of concentrating on the disabled person's reinstatement in employment, has been able to consider him more broadly as "a human being and a social unit." It thinks that his facilities for getting suitable employment are now "comprehensive and well-established, needing little change or development"; but it admits that the "full fruits" of the statutory provisions are not always reaped. It believes that the public ought to know more not only about the range and achievements of the services offered but also about the ideas and aims of rehabilitation, and its report does in fact give an account of all the various forms of help a disabled person may expect in the Welfare State. (A more detailed account has appeared elsewhere.[2]) The committee does not see much chance of reducing the administrative complexity of the services, but "has been impressed by the degree in which, given the will to do so, all the

1. Report of the Committee of Inquiry on the Rehabilitation, Training, and Resettlement of Disabled Persons (chairman, Lord Piercy). Cmd. 9883, H.M. Stationery Office. Pp. 126. 5s. 6d.

2. Services for the Disabled. Published for the Standing Resettlement and Rehabilitation Committee. H.M. Stationery Office. S.O. Code No. 36-217. Pp. 88. 4s. 6d.

agencies can work together at the point of contact with the disabled individual." It is, satisfied, too, that the human standards in all these services are high.

Size of the Problem.—The number of handicapped people in the country is not known, and the committee recommends an inquiry to find out how many people who have had sickness benefit for more than six months could be assisted to return to work.

The Medical Contribution.—The committee accepts the view of the British Medical Association that consultants are still slow to consider the rehabilitation needs of their patients, and that further education of the medical profession, including medical students, is much needed. In occupational therapy the trend towards more realistic occupations is commended, including the development of advice and help to disabled housewives. "If in every physiotherapy department treatment were given which was intensive, planned for the individual patient and with a background of discipline, it might well be that attendances would be less prolonged and the need for staff thereby relieved." The committee recommends that hospital boards should reorganise their arrangements so as to secure a purposeful graduated programme designed to restore full activity and to reorient the patient's outlook from that of an invalid to that of a responsible worker.

Assessment of capacity is essentially a medical responsibility, while liaison with other agencies is primarily the duty of the almoner or psychiatric social worker.

"Early and continuing assessment of a patient's future abilities is fundamental to satisfactory resettlement. In most cases, informal consultation between those concerned will suffice, but for the most difficult cases, a resettlement clinic is desirable. . . . For an effective service a resettlement clinic should be set up in each major hospital as a normal feature of its work, meeting regularly and dealing with patients from hospitals and those from other sources."

The general practitioner should take more responsibility for rehabilitation than he does now, and he should have more knowledge and information. Doctors working in the regional medical service of the Health Departments should consider whether patients referred to them would benefit from rehabilitation, and make recommendations.

Industrial Rehabilitation.—Rehabilitation is a single process in which the emphasis at the beginning is on medical treatment and at the end on work. There is scope for development on both the hospital and the industrial side. The larger share of what can be spared from the national resources in the near future should be on the hospital side, but the Ministry of Labour's 15 industrial rehabilitation units ("characterised by their realistic workshop atmosphere") should be supplemented by new ones in some industrial areas which have none. Some doctors think that, for entry to an I.R.U., a patient must be certified as fit for work; but this is a misconception. The duties of the part-time medical officers of these units may need development, and the I.R.U. should be linked with a hospital providing specialist services.

Proposals have been made that comprehensive centres should be established where hospital rehabilitation, industrial rehabilitation, and assessment of capacity would all be undertaken on one site. The committee wants two or three experimental centres of this kind to be set up.

Several large industrial firms have set up special rehabilitation workshops, and it is hoped that others will do the same. But the committee does not favour inducement payments to smaller firms. It also resists the suggestion of a form of part-time employment with proportionate wages and sickness benefit.

Welfare Services.—Describing the welfare services of local authorities the report says: "It is clear that only the fringes of the field have yet been touched." More should be done to help patients discharged from hospitals, and the committee recommends the provision of more hostels (both long-term and short-stay) for the disabled, and of day clubs or centres.

More would have been done since 1951 if local authorities had had help from central funds: "the existing state of affairs discourages and retards developments which are essential." Accordingly the committee, while appreciating that developments can take place only gradually, recommends that the Exchequer should grant aid in respect of welfare services provided for the disabled under the National Assistance Act. It is tentatively estimated that the total cost of full welfare services might be about £6,600,000 annually.

Vocational Training.—The report accepts the present arrangements as satisfactory.

The Disabled Persons Register.—The suggestion that registration should depend on a percentage degree of disability is rejected. The committee does not think it practicable to purge the register of so-called unemployables, but it recommends that a stricter line should be taken when registration is renewed. It sees no reason for abolishing the quota scheme, and many for its continuance.

Placing of the Disabled in Employment.—Suggestions have been made that the disablement resettlement officer (D.R.O.) should be drawn from the ranks of social workers. The committee thinks that the present basis of appointment from the ranks of Ministry of Labour staff is right. It is less happy about the selection and training of D.R.O.s.

The suggestion that employers should be encouraged to employ severely disabled persons by a form of wages subsidy is rejected.

Sheltered employment can only be second best. Those who take it up should be encouraged to go into ordinary work as soon as possible, and they should make a "significant contribution to production." A clear distinction should be drawn between the disabled capable of employment and those working only to keep themselves occupied.

Local authorities' powers in respect of sheltered employment should be transferred to the Disabled Persons (Employment) Act from the National Assistance Act, under which, however, occupations not carried on for a livelihood would continue to be provided as a welfare service. Local authorities should continue to provide work under sheltered conditions for the blind but under powers derived from the Disabled Persons (Employment) Act; for the tuberculous this power should be derived from the Disabled Persons (Employment) Act, and not as at present from the National Assistance and National Health Service Acts.

As Remploy Ltd. provides the only means of employment for a large number of severely disabled persons, it should be continued.

The Young Disabled.—The committee was generally satisfied with present arrangements for identification of disabled children, and, subject to some tightening of procedure, with the provision of education in hospitals and elsewhere.

It examined the criticism that many disabled young persons take up unsuitable employment, but it does not want to compel disabled school leavers to use the Youth Employment Service. In view of the small number of young people taking training courses, the minimum age of 16 for the provision of vocational training under the Disabled Persons (Employment) Act should be brought down to the school-leaving age.

Mentally Ill or Mentally Defective.—Further arrangements to enable mental patients to attend an I.R.U. should be considered. The provision of hostels would help them to get back to work. For patients who cannot be discharged from hospital, work should be provided wherever possible on the hospital premises.

National Corporation for the Disabled?—It has been suggested that a national corporation should assume responsibility throughout for the rehabilitation of disabled persons. The committee thinks that such a body would not serve the purpose in mind and would be much more expensive.

Voluntary effort is still necessary, but will best serve as supplementing existing services and pioneering new ventures. The time is ripe for a close examination of the nature of the contribution which voluntary organisations might best make.

Finance.—Services are not made more effective solely or mainly by spending more on them. Even if more money were available there would still be the difficulty of getting trained staff in the social field. Only in the suggested grant aiding of local-authority welfare services has the committee suggested any major item of additional expenditure.

Medicine and the Law

Head Injuries as a Cause of Suicide

IN September, 1953, a bookmaker, aged 53, was run down by a bus, and sustained injuries, including a fracture of the vault of the skull, which caused concussion and loss of consciousness. He was in hospital for some weeks and did not return to work until February, 1954. From May or June, 1954, his business began to decline, and his manner, formerly kind and fond towards his family, changed, becoming progressively difficult and abusive. In March, 1954, he sued the London Transport Executive for damages, and in connection with that action was examined by two specialists, who found no outward abnormality. His behaviour did not improve, and his business continued to get worse. By January, 1955, he had an overdraft for the first time; and on Jan. 22, he borrowed £200 from a friend which he paid into his bank. The following night he committed suicide by taking an overdose of a barbiturate. His widow brought an action for negligence against London Transport Executive, claiming damages inter alia under the Fatal Accidents Acts for the death of her husband, which she alleged had resulted from the accident.

DEVLIN J. found that the bus-driver had been one-third to blame for the accident, the deceased being contributorily negligent. His Lordship said that the widow's claims under the Fatal Accidents Acts depended on proof that the husband's suicide was due to the injuries received in the accident, and the first general question was thus whether head injuries of that sort were or were not liable to give rise to suicidal tendencies. That had to be decided entirely on the medical evidence and had given rise to a conflict of opinion and he accepted the view that such head injuries were reasonably capable of creating a suicidal tendency. In this case there was no external factor that could induce a mind of ordinary firmness even to contemplate suicide, nor evidence of any prolonged anxiety which could produce a suicidal tendency in a previously healthy mind, but the circumstances pointed to a diseased mind as being at least a contributory cause. The personality change which the medical witnesses agreed could result from a head injury such as this showed that those injuries were at work throughout the whole period in effecting a change in the deceased's mental processes, and also accounted for his loss of business grip.

In determining the cause of the suicide on the basis that head injuries of this sort were, as a matter of medical knowledge, capable of giving rise to suicidal tendencies, his Lordship took from the medical evidence no more than the fact that head injuries were one of the possibilities which might account for the suicide. On the evidence what other possibilities were there? First, depressive psychosis; that his Lordship rejected, as there was no positive evidence to support it; and, second, worry or anxiety due to business loss. He rejected that as the sole cause of the suicide, for if the deceased was worried about his financial position, the fact that he had borrowed money one day and committed suicide the next was evidence of some irrationality. His Lordship was satisfied that an irrational state of mind arising from the head injuries was a cause, if not the main cause, of the suicide, and the financial worry, operating on that state of mind, might have contributed to the death and was perhaps the immediate cause of it. His Lordship was, however, satisfied that the deceased's financial position in January, 1955, and his business losses could be traced back to the accident and were attributable to it; that the head injuries did create a suicidal tendency; and that the business losses, if they affected his mind at all, were themselves an indirect consequence of the accident. In all the circumstances his Lordship was satisfied that the suicide was caused by the accident. He assessed damages under the Fatal Accidents Acts at £3750, the plaintiff being entitled to a third of that sum—namely, £1750. Total damages awarded £1776.

Cavanagh *v.* London Transport Executive.—Devlin *J.* Oct. 22, 1956. Richard Elwes, Q.C., and Patrick O'Connor (Beaumont Son and Rigden); Norman Richards, Q.C., and David Croom-Johnson (solicitor, London Transport Executive).

E. M. WELLWOOD
Barrister-at-Law.

Public Health

Poliomyelitis

THE fall in the number of cases of poliomyelitis follows the usual trend for the time of year. Uncorrected notifications for the week ending Oct. 27 were 52 paralytic and 62 non-paralytic cases—a total of 114, or 26 fewer than in the previous week. The incidence remains below the average for the past nine years, in which the number of cases in the corresponding week has varied between 70 (1948 and 1954) and 367 (1949).

Infectious Diseases in England and Wales

Disease	Week ended October			
	6	13	20	27*
Diphtheria	2	10	6	9
Dysentery	421	524	636	568
Encephalitis:				
Infective	10	9	7	6
Postinfectious	..	3	1	2
Food-poisoning	308	282	341	303
Measles, excluding rubella	1971	2147	2790	3009
Meningococcal infection	20	24	22	22
Ophthalmia neonatorum	22	32	26	26
Paratyphoid fever	9	4	7	14
Pneumonia, primary or influenzal	239	261	284	316
Poliomyelitis:				
Paralytic	64	64	77	52
Non-paralytic	91	86	63	62
Puerperal pyrexia	226	229	267	224
Scarlet fever	464	532	601	578
Smallpox	..	..	..	..
Tuberculosis:				
Respiratory	561	523	585	590
Meninges and C.N.S.	3	10	7	9
Other	71	70	65	69
Typhoid fever	3	8	1	2
Whooping-cough	1487	1395	1474	1552

* Not including late returns.

Conferences and Congresses

EPIDEMIOLOGY AND CONTROL OF RHEUMATIC FEVER

THE latest of a succession of useful seminars organised by the International Children's Centre in Paris was one on the Epidemiology and Control of Rheumatic Fever, held on Sept. 25–27 with Dr. DAVID RUTSTEIN, professor of preventive medicine in Harvard Medical School, in the chair. It was attended by invited representatives from most European countries, including Yugoslavia, Czechoslovakia, and Poland, and three of the principal speakers came from the U.S.A.

This seminar centred on the relation between streptococcal infection and rheumatic fever and was opened by Dr. R. WAHL and Dr. P. MEYER (Paris) who reviewed the biological activities of group-A streptococci and the immunological responses they evoke in man. Their paper was followed by a brief statement from Dr. R. E. O. WILLIAMS (London) on the methods and results of serological typing of these streptococci, from which it was evident that the Griffith typing method gives much better results than the Lancefield precipitin technique. In this session, largely devoted to techniques for demonstrating streptococci and their specific antibodies, it was noted that considerable variations in the level of antibody titres to various streptococcal antigens were reported from different centres; but the point was made that a significant rise in antibody titre during the course of the illness was the important criterion.

The epidemiology of streptococcal infections was reviewed by Dr. P. HEDLUND (Stockholm), largely on a basis of his experience with many thousands of cases of scarlet fever which are compulsorily admitted to the one infectious-diseases hospital in Stockholm. He emphasised the importance of rhinitis, otitis media, skin infections, and vulvovaginitis in environmental contamination with streptococci and accepted the current view that close contact is more important than contaminated dust in the dissemination of streptococcal infection. Penicillin therapy, by eliminating streptococci from the nasopharynx and markedly reducing septic complications, had allowed discharge of the scarlet-fever patient from hospital after seven days with very little risk of secondary "return cases." However, non-septic complications like rheumatic fever and synovitis had remained around 1% and there had been an increase in relapses or recurrences of scarlet fever.

The relation between streptococcal infection and rheumatic fever was discussed by Dr. MACLYN MCCARTY (New York) on the basis of clinical, epidemiological, bacteriological, serological, and therapeutic findings. Perhaps the most interesting and convincing evidence came from the immunological data, starting from Todd's demonstration of antibody to streptolysin O (A.S.O.) following streptococcal infection, and the finding that 70–80% of cases of acute rheumatic fever showed a rising titre to this streptococcal antigen. If to A.S.O. were added the antibodies to streptokinase and hyaluronidase, nearly 100% of rheumatic patients showed evidence of recent streptococcal infection. Not only so but the mean maximum antibody titre was higher in rheumatic than in non-rheumatic subjects, which suggested a greater reactivity of their tissues to antigenic stimulation. On the therapeutic side, the evidence that chemoprophylaxis in the rheumatic subject prevented recurrences by preventing fresh streptococcal infection, and more recently the findings of Rammelkamp and his colleagues that effective antimicrobial therapy in cases of streptococcal sore throat much reduced the incidence of first attacks of rheumatic fever, were convincing proofs of the dependence of this disease on recent streptococcal infection.

Dr. E. G. L. BYWATERS (London) dealt with factors other than streptococcal infection that might be concerned in the ætiology of rheumatic fever. He estimated from statistical data that 1 in 1000 school-children might develop rheumatic heart-disease after a streptococcal sore throat (a much lower figure, incidentally, than Rammelkamp's 2–3%, irrespective of age), though he noted that during epidemics of streptococcal infection the incidence might rise to 10% in normal children and 50% in those with previous rheumatic disease. Overcrowding associated with cold and moisture was the most important environmental factor, and these were the conditions which facilitated the spread of streptococcal infection. Thus, Holmes and Rubbo in Melbourne had found a higher carrier-rate of group-A streptococci in the low rental than in the high-rental areas of the city (associated with corresponding rates of rheumatic fever), while the Taplow team had demonstrated a significant correlation between the A.S.O. titres of cord blood and the social class of the mothers. The hereditary factor, which has been championed particularly by May Wilson as being associated with a mendelian recessive gene, is now generally accepted as playing a part in ætiology, although the low incidence following sporadic cases of streptococcal infection compared with epidemic attacks suggests that the penetrance in susceptible cases is ordinarily rather low. Bywaters referred to some recent work by his colleagues on the red-cell phenotype and secretor status of rheumatic compared with normal subjects, which showed that the incidence of red-cell phenotype Le a+ was significantly higher in the rheumatic group.[1]

A comprehensive review and digest of the literature on the chemoprophylaxis of rheumatic relapses or recurrences was given by Dr. MOZZICONACCI (Paris). Penicillin preparations were rather more effective than either sulphonamides or the broad-spectrum antibiotics in preventing relapses, while the two latter groups of drugs were either totally ineffective (sulphonamides) or only 50% effective (tetracyclines) in eliminating streptococci when used to treat cases of streptococcal sore throat. The most efficient penicillin prophylaxis was the injection once a month of 1·2 mega-units of the long-acting drug benthazine (D.B.E.D.), but daily doses of 200,000 units of penicillin G by mouth also gave very satisfactory results, and this method resulted in a much lower incidence of sensitisation reactions than the monthly injections of the long-acting drug. The injections of D.B.E.D. also produced many painful local reactions, while the long-continued use of sulphonamides, besides involving a small risk of granulocytopenia and sensitisation, might lead to drug-resistant streptococci.

Dr. J. LABESSE (Paris) then reported the results of various forms of chemoprophylaxis in the follow-up of 377 rheumatic children, aged 4–16 years, attending l'Hôpital des Enfants Malades for periods varying from 6 months to $5^1/_2$ years. Although not a controlled series, comparison of those children who had continuous therapy with those who had interrupted periods without the drug left little doubt of the value of chemoprophylaxis in preventing relapses. Other workers reported similar results.

Prof. R. CRUICKSHANK (London), in reporting the results of a controlled trial with oral penicillin carried out ten years ago in some 300 children spending 6 months' convalescence in the Lancing Heart Home, commented on the fact that 3 of the 4 rheumatic relapses in the control group were not preceded by clinical attacks of

1. Glynn, A. A., Glynn, L. E., Holborow, E. J. *Lancet*, Oct. 13, 1956, p. 759.

sore throat, while in both groups there were instances of subclinical streptococcal infections, characterised by a rising A.S.O. titre and sometimes an increase in the erythrocyte-sedimentation rate. Obviously rheumatic relapses could not be prevented if only *clinical* streptococcal infections in rheumatic children were to be treated.

The evidence in favour of treating streptococcal sore throat in order to prevent first attacks of rheumatic fever was also reviewed by Dr. MOZZICONACCI. It came mostly from the studies of Rammelkamp and his colleagues in American servicemen, although there were also recent reports by Breese and Disney [2] and Bunn and Bennett [3] of trials in school-children. Injectable penicillin preparations reduced the incidence of rheumatic fever by more than 90% in comparison with the untreated controls: with the tetracyclines the reduction was around 60–70%. It seemed that the most important factor in preventing rheumatic attacks was elimination of the infecting streptococci, and in this respect daily penicillin injections for 10 days or a single dose of 1·8 mega-units of D.B.E.D. were the only sure remedies. Penicillin used as late as the fifth to ninth day of the streptococcal throat infection (with a rising A.S.O. titre) was also effective, provided the streptococci were eliminated.

The rational use of antimicrobial drugs in the prevention and control of rheumatic fever was considered by Dr. MAXWELL FINLAND (Boston) who discussed, in turn, their effect on the bacteria, optimum dosage, untoward effects, and drug resistance. He showed that the highest incidence of sensitisation reactions occurred with the long-acting injectable penicillins and the least with oral penicillin. He was cautious about the oral preparations of D.B.E.D. because of its variable absorption and felt that penicillin V would be the most reliable preparation for oral use, but he mentioned the new drug sulphamethoxy-pyridazine as a possible rival.

In the final session, Dr. KUTSTEIN (Boston) discussed how the procedures for preventing rheumatic fever and rheumatic heart-disease could be applied in the community. Rheumatic patients are particularly vulnerable in hospital or other semi-closed communities because of the greater risk of exposure to streptococcal infection; hence hospital staff, teachers, and the like must see that such patients are properly protected against this risk. For the patient exposed more casually and sporadically to the risk of streptococcal infection, it is important first to confirm the diagnosis of rheumatic disease, and then both physician and family must be convinced of the need for long-term chemoprophylaxis. The patient must be under continuous medical supervision—e.g., by regular attendance at a rheumatic clinic which may require action by the local health authority, and all concerned must ensure that chemoprophylaxis is continued throughout the year for five years or up to the age of puberty. Where chemoprophylaxis is not being carried out, streptococcal infection in a rheumatic subject must be treated early and effectively with a course of penicillin lasting 7–10 days. Sulphonamides should never be used for this purpose. Because of difficulties in clinical diagnosis, laboratory help by early culture and reporting on nose and throat swabs should be utilised. The prevention of first attacks of rheumatic fever by effective treatment of the antecedent streptococcal infection was much less practicable because many first attacks follow subclinical streptococcal infection and many "sore throats" are not due to the hæmolytic streptococcus. However, a greater awareness in the medical profession of the need to treat recognisable streptococcal infections with bactericidal drugs like penicillin and erythromycin would help to reduce the total incidence of these infections. In particular, as was pointed out in the subsequent discussion, the recognition and urgent treatment of dangerous carriers—e.g., children with purulent rhinitis, otitis media, and streptococcal skin lesions—would materially help to prevent the spread of streptococcal infection in vulnerable communities such as schools and pædiatric wards.

2. Breese, B. B., Disney, F. A. *Pediatrics*, 1956, **17**, 834.
3. Bunn, W. H., Bennett, H. N. *J. Amer. med. Ass.* 1955, **157**, 986.

Parliament

QUESTION TIME

Prescription Charges

Dame IRENE WARD asked the CHANCELLOR OF THE EXCHEQUER if he would state the basis and machinery on which the new charges for prescriptions would be reimbursed to those who could not meet the charges without hardship and who, though outside the National Assistance scales, have a personal budget which on a small fixed income could not meet further charges without hardship. The Minister of Health, Mr. R. H. TURTON, who replied, said that repayment would be made on the same basis as at present to any person who could show that his resources were insufficient by National Assistance standards to meet the charge. The machinery for claiming, and making, repayment would be on similar lines to that which was already well established and had proved satisfactory, but he was reviewing it in consultation with the National Assistance Board and other bodies concerned to see if it could be improved.

Dr. EDITH SUMMERSKILL: Is the Minister aware that there are hundreds of thousands outside the comparative few who qualify for National Assistance who would not be able to have this sum refunded?—Mr. TURTON: There will be two categories, as now—those who are already on National Assistance and those for whom hardship is created which brings them on to the National Assistance standard; and at the present time that is working well. Last year there were 9 million applications altogether for prescription charges. Out of those, 30,000 were from people not in receipt of National Assistance and in 95% of those cases the claim was refunded.

Mrs. BESSIE BRADDOCK: May I ask the Minister whether a person has to pay for the whole of the prescription before he or she can make any application at all to the Assistance Board, as it is absolutely impossible at the moment for an aged person, in receipt of pension only to pay 4*s*. or 5*s*. before making an application to the board for refund?—Mr. TURTON: That is the very kind of point of machinery which I am at present looking at and discussing with the National Assistance Board.

International Certificate of Vaccination

The Government have rejected the amendment to this certificate recommended by the 9th World Health Assembly on the ground that it does not provide space for recording repeated attempts at primary vaccination.

Toxicity of Araldite

Factory inspectors have been asked to inform the Chief Inspector of all processes in which these substances are in current use in industry. The substances may give rise to irritation of the skin and of other tissues with which they come into contact, but the Ministry of Labour has no evidence that they have caused specific damage to the lungs.

Frozen Eggs

During the twelve months to the end of last September 563 samples of frozen eggs were reported by the Public Health Laboratory Service to be infected. Shipments are being sampled and only batches with negative samples have been released without condition. Infected samples have been found in shipments from China, Australia, South Africa, and New Zealand.

Practice Exchanges

Doctors' practice expenses for the year ending March 31, 1955, have been reassessed at £23,549,227, or £1114 per doctor, an increase of £2,891,797, or £114 per doctor, over the preceding year.

On Oct. 30 Lord COHEN OF BIRKENHEAD, of Birkenhead, in the County Palatine of Chester, formerly Sir Henry Cohen, was introduced and took his seat in the House of Lords. His sponsors were Lord McNair and Lord Adrian.

In England Now

A Running Commentary by Peripatetic Correspondents

LET us hope that never again will our generation pass through a day as vile and disheartening as this Guy Fawkes' eve. It opened to find nation, party, and family divided and bitter: when one side spoke of murder, the other spoke of cowardice; when one appealed to "Conscience" the other cried "Sedition." To clear the air, to help decision, one wanted facts, news; for this one turned on the radio, only to hear of brutality and duplicity. Recorded sounds brought the disasters still nearer home: Mr. Nagy and Mr. Lodge breaking the news, the American delegate sounding closer to heart-break than the trapped premier; the ominously funereal Hungarian anthem; the pitiful appeals for help. To complete the gloom came the accounts of riots in Whitehall, the death of the editor of a newspaper to which many readers had turned in these hard days for the truth, and the operation on the American Secretary of State for unsuspected cancer. Here was news in which the treachery of man to man was echoed by the treachery of man's body to himself.

* * *

There is a distinctly pre-Florence Nightingale air about the inside of an Italian hospital. The ward I was in was light and airy, with magnificent seaward views. But after saying that, well, where can one begin? I suppose twelve would have been about the right number of beds for a ward of that size; instead, there were eight closely packed down each wall and at least another four in the middle. Then, too, it seemed odd that there were rarely any nurses to be seen and that the patients were left so much to their own devices. What really was impressive was the relatives. At almost any hour, day or night, they were there; none of your staid regulations about "only two visitors for each patient at any one time." The whole family, the whole clan sometimes, seemed to be gathered round the bed; workmates, neighbours, any and everybody came without let or hindrance. Of course that might explain the absence of nurses; it was probably a subtle plan to economise in man-power. And after all, why shouldn't a wife look after her husband just as much in hospital as if she had him ill at home? And stay by his bedside all night too. And if all the family likes to come along and make a home from home, and pass round the bottle of wine and fruit they have brought, why not?

So much for non-visiting days. It was on the official visiting days that the tribe really moved in. Well over a hundred people, apart from patients, filled the ward. The throng was so dense, and the babel of talk so loud that you couldn't tell who belonged to whom, or even which was patient and which visitor. As there were no screens, small children, women, and strangers were free to observe any patient and any attention he received. Once or twice the cry was raised—*Donne fuori* (women outside)—and there was a comparative hush and scuttle while the ward was cleared of all females, and perhaps a fresh casualty brought in, lifted into bed, and undressed, still without any sign of nurses. For a day or more the newly admitted casualty might lie there, the original dressings still untouched on his wounds, and only his wife and other relatives around.

But, however different from British hospital procedure, at least it was all very happy, friendly, and informal.

* * *

"Here's lead in your pencil!" has long been a variant form of toast across the pint mugs in our local hostelry. I always thought it had some historical association with cider stored in ancient cisterns, but now we know better than that. Mind you, the *Black Bull* is far from being the only source of fluid intake in these parts. We have a village waterworks up behind the vicarage, we have; it comes from way out on the fellside where old Farmer Morphet runs his stirks and heifers, maybe a bit mucky at times but nobbut the worse for that. I dare say we would have gone on for years if one of those fellows from the War Ag had not come nosing round. We still call it the War Ag because we seem to be always hovering on the brink of war with one lot of foreigners or another, and anyway County Agricultural Executive Committee sounds a daft mouthful to us. Well this War Ag chap talked old Morphet into some clever scheme for improving his upland pastures by digging drainage trenches all over the peat. It may have improved the grass, but it made a sorry mess of our village water-supply. The rains poured off the fellside and scoured peat, bracken, and cow pats straight to the back-kitchen tap. Our practice records showed that the fellsides were not alone in being scoured. I took a jar of water, with the bottom third set solid, and plonked it on the District Council's doorstep with an ultimatum that this Mulligatawny product must be stopped forthwith. The council were really very nice about it. They found a clear little spring near Morphet's ring-fence and coupled it up instead of the beck. The water was a bit on the hard side, but an extra slap of synthetic detergent in the washing-up bowl soon fixed that. Then some busybody decided to analyse our new supply and found that it contained 0·8 parts per million of lead as it bubbled out of the spring, some eight times above what the Americans tell us they like to drink. (The British keep openminded about such matters.) We were thinking about inviting a party of convicts from the Ohio State Penitentiary to come over as civic guests of our Parish Council to see how long they could stick it on our water-waggon, but the school dentist pointed out that some of the kids in our village school were already getting blue lines on their gums. Just as I was hoping to get a post mortem on old Giles, he was inconsiderate enough to die on holiday and get himself cremated at Golders Green. His bones would have been worth their weight in lead. At £117 per ton I am tempted by Burke and Hare. But there are ethical limits to scientific research, so rather sadly I acquiesced in the Engineer's plan to cut off the spring and go back to the washings from the pasture. Now we are redeveloping our tolerance to coliforms, the bar takings are rising in the *Black Bull*, and the toast of lead in your pencil reverts to a less literal interpretation.

* * *

The ballroom was full, and most of the dancers were on the floor. As they concentrated on the beat of the music, a faraway look on their faces, there was no time for small talk. Back and fore, in and out, went their feet, an occasional hand raised on high, with pointed finger, swirling skirts as they spun to the pounding beat of bass and drums. Round the floor those not dancing sat back and tapped—feet, hands, spoons and glasses, anything giving empathy with the dancers. The ecstatic expression on their faces showed that they were all "sent." The men in their rather narrowly cut trousers and close-fitting black jackets, the women, with their variegated colours, presented a picture often mentioned in our newspapers and discussed by members of the learned professions. But there was one difference—the age-group. Here the youngest was no teenager but a mature 25 or so while the oldest . . . well I would hardly like to hazard a guess as to the age of the oldest member present at the annual dance of the local branch of the Br—t—sh M—d—c—l Ass—c——t——n.

It was with some apprehension that the band-leader struck up the first number in Rock 'n' Roll towards the middle of the evening. As he finished he said "Now you'll be able to tell your friends that you've rocked." But he was totally unprepared for the tremendous shouts for more which met him. One could visualise the manager rushing to the phone anticipating yet more Teddy Boy riots, headlines in the paper "Bedside Boys Break Loose," while gangs of surgeons removed appendices, G.P.s terrorised the population with extraordinary investigations and ordered vast quantities of "foods not drugs," and in the background psychiatrists waylaid innocent passers-by, strapped them to a couch and analysed them forthwith. Fortunately none of this happened. As the music ended, the dancers returned to their seats, exhausted, seeking further refreshments, but rather gayer for the rest of the evening than they might otherwise have been. When the Bar, the Magistrates, and others have had their annual dances and have experienced the new rhythm, maybe they will achieve some toleration and understanding, or maybe their anxiety will be deepened. "If it does that to ME, what will it do to some poor young teenager who knows no better?"

Letters to the Editor

ADVERTISEMENTS FOR DRUGS

SIR,—At present a paper war is being waged by the numerous companies of varying repute which claim to meet the nation's requirement of ethical pharmaceuticals. As their sales depend on our approbation, it behoves us to examine the means by which they promote them.

The advertisements which burden the breakfast table are either pictorial, designed (one presumes) to appeal to that section of the medical public unprepared to read; or pseudo-scientific, written by gentlemen of great eminence in distant lands, with numerous references to their own literature, presumably produced for those unwilling to think. Disposal of both is simple. More subtle is a new and vexatious variant masquerading as bona-fide correspondence; but, as this is likely to engender nothing beyond justified annoyance with its perpetrators, we must hope it will quickly disappear.

The ubiquitous representative, or traveller, with his solicitude for keeping us "up to date," is more troublesome. A pertinent question, especially when clinical, commonly evokes an evasive or misleading reply. Nevertheless, he persuades many of us to treat our patients with nostrums, elegant preparations, &c., which are often useless, frequently expensive, and sometimes frankly dangerous.

More insidious is the inspired article "in the literature." Epic advances are claimed and described in extravagant terms, in a small series, badly or wholly uncontrolled, and inadequately followed up. One suspects that some of the authors hope that such "published work" will subsequently attract the favourable notice of selection committees. Others appear to be written by people with no such excuse, and who should know better. Unhappily, this sort of naïve progressivism characterises the contemporary scene and affects most sections of the profession, whether they are working in lock-up surgeries or in units in Marble Halls. Whether the new wonder drug is efficacious or not, or authority, slowly off the mark, eventually condemns it, is immaterial: the result of such publications (a quick burst of orders) is no doubt satisfactory to the manufacturers, in that the National Health Service will pay the bill.

It is my view, shared I hope by others, that the continued acceptance and prescription of the latest and mostly untried preparations, at a time when it is imperative to keep down costs, is not only improper but quite indefensible. There are very few useful drugs without official equivalents, whose indications and possible disadvantages are minutely recorded and widely recognised: new and experimental agents should be adequately assessed, by those competent to undertake such work and pronounce an unbiased opinion, before being made generally available.

The Ministry of Health is continually exhorting care and prudence in prescribing, and has issued "advice" from time to time, particularly regarding the abuse of the newer hormones and antibiotics. It is greatly to be feared that some of our brethren who tend to regard this as an "encroachment on their professional liberty" and who, in their haste to "keep up with the Joneses" and no doubt "preserve the doctor-patient relationship," are likely, by their uncritical response to the importunities of the manufacturers, to condemn not only themselves but also their more conscientious fellow practitioners. Surely we should recognise that the solution of this problem is our own responsibility. If we do not, the Minister may justifiably intervene to restrict the "free choice of drugs." We must never allow either our patients or misleading advertising to rob us of this freedom.

West Bromwich. W. J. WALKDEN.

THE RÔLE OF THE PÆDIATRICIAN

SIR,—I have read Prof. Crighton Bramwell's paper (Oct. 20), based upon his Harveian Oration, with so much interest and pleasure that I am loth to criticise even one paragraph in it. But his statement that "it is only in comparatively recent years that pædiatrics has split off from general medicine" calls for comment, especially in view of his doubt about the wisdom of a child with rheumatic heart-disease being under the care of a pædiatrician up to the age of puberty. Surely this opinion, which would displace the general physician for children in favour of the specialist, is at variance with much that he expresses elsewhere in his paper, and I suspect that Professor Bramwell the clinician (to whom "the soil is as important as the seed") has listened to the special pleading of Professor Bramwell the cardiologist (to whom "it is the disease, not the age, that matters"). There would be chaos if the consultant medical care of older children were arranged in the way proposed by Professor Bramwell. Presumably the child with a urinary infection would go to the urological clinic; the child with a wheezy chest would be at the allergy clinic; the child with chorea at a neurological clinic—and if she then developed a carditis she would have to be transferred to the cardiological clinic.

But the administrative difficulties of such an arrangement are less serious than the undesirable results of allocating sick children on a "specialist" basis rather than as individuals requiring medical supervision in a broader and more comprehensive way. If general medicine has a function to perform for adults—and who will deny this?—why withhold its benefits from the older children? This, presumably, is what Professor Bramwell is suggesting, because for him the scope of the pædiatrician might well be limited to infancy and early childhood—I assume this to mean the first 4 or 5 years of life. Alternatively, there is the possibility that the consultant medical care of the older child might be regarded as within the province of the general physician for adults. But is this practicable nowadays? To expect general physicians (for adults) to accept the hospital care of all children over the age of 5 years and to keep up to date in medical advances covering the whole span of life from 5 years to senescence would place a well-nigh impossible burden upon them. Furthermore they would have had little experience of the early formative months and years of a child's life, which have such an important relationship to later childhood.

Perhaps I may be permitted to quote my own professional experience, to illustrate what I mean; and it would apply to many pædiatricians in my age-group. Though my main interest has always been children, I did not restrict myself to pædiatrics until 1944, when I had already served for 21 years as a consultant and university teacher at a general hospital for adults. During much of this earlier period I was serving on the staffs of two general hospitals for children and one maternity hospital, as well as the general teaching hospital for adults; this was necessary to give me sufficient pædiatric experience. The strain of routine duties was considerable, and medical knowledge was advancing by leaps and bounds; I became more and more convinced that the task of keeping abreast of advances in such a wide field was beyond my capacity. So I relinquished my work for adults and became a pædiatrician—a general physician for children.

Pædiatricians work alongside the other members of the full pædiatric team, which includes general practitioners, public-health doctors, and specialists, and they have no intention of trying to usurp the functions of these colleagues. Their own contribution is to give practical interpretation, for children, to what Professor Bramwell calls "the fundamental unity of medicine."

It is important for our patients, and for the proper practice both of general medicine and pædiatrics, that these two services should be interlocked as closely as possible. I hope that a time will come when it is possible for a pædiatrician to be "paired off" with a general physician, perhaps for a period of 5 to 10 years, each doing a limited number of sessions in the other's hospital. I believe that a scheme of this sort, even if possible only in certain districts, would commend itself to Professor Bramwell.

Liverpool. NORMAN B. CAPON.

"NOTTINGHAM MENINGITIS"

SIR,—A girl of three years was admitted on Oct. 24 to Preston Royal Infirmary, with the clinical and pathological findings described by Dr. Dodd in your issue of Nov. 3 (p. 947). A boy of five months, living in the same household, was admitted with the same condition on Oct. 26.

The girl's C.S.F. showed 420 leucocytes per c.mm. (lymphocytes 85%, polymorphs 15%) and the chemistry was normal. The blood-count showed a leucocytosis of 12,400 (polymorphs 38%, lymphocytes 60%, monocytes 2%). In the boy the C.S.F. showed 214 leucocytes (lymphocytes 94%, polymorphs 6%) and the chemistry was normal. The blood-count showed leucocytes 21,200 per c.mm. (polymorphs 60%, lymphocytes 34%, monocytes 6%).

In both cases the rash consisted of minute discrete erythematous papules, fading on pressure, distributed over the trunk, face, and proximal portions of the limbs.

Royal Infirmary, Preston. G. HESLING.

BILIGRAFIN FOR HYSTEROSALPINGOGRAPHY

SIR,—My very limited experience with 'Biligrafin' has been similar to that of Dr. Sandler (Oct. 27). I have used this substance on only four occasions, all within the past few months. Each of the four patients complained of considerable pain during and for some minutes after the injection, although they had had 'Omnopon' gr. ½ about three-quarters of an hour before it. Two patients had symptoms of severe peritoneal irritation with vomiting for several hours after the injection. These patients were treated in private practice and had been in hospital overnight, and were kept in for 24 hours after the X-ray examination. No symptoms of such a severe nature were met with using a similar technique and a contrast medium called 'Viskiosol' (before it was withdrawn) in eighty consecutive cases. One of the biligrafin patients was examined with a vaginal speculum some 24 hours later, and a thick curdy precipitation product was found in the fornices. As a result of these unpleasant experiences I have decided not to use biligrafin again for hysterosalpingography.

I should very much like to know what exact place the use of contrast media should have in the investigation and treatment of infertility. There is no doubt that, from a diagnostic viewpoint, its use is excellent: the more one makes use of the technique the more one is impressed by the revelation of conditions that may have been only guessed at when using the other methods of investigation—e.g., minor uterine deformities, unilateral tubal occlusion, or old probably healed tuberculous salpingitis. However, I have not been able to satisfy myself that, despite the most stringent precautions, the use of a contrast medium does not interfere with subsequent conception in some cases even without exacerbating unrecognised tubal inflammation, and I am not at all satisfied with the rate of subsequent conception, in patients on whom I have performed this test.

It would be interesting to compare the incidence of conception in a random selection of sterility patients, divided into two similar groups, one of which was treated with gas insufflation, and the other with salpingography.

Galway, Eire. D. T. O'DRISCOLL.

OMISSION OF PRESCRIBED P.A.S.

SIR,—The comments concerning the drug 'Dipasic' (by Dr. Dixon and Dr. Stradling [Oct. 27]) are timely. It seems to me that this drug is either a considerable advance or a great danger in the treatment of pulmonary tuberculosis and I agree that until there is some good evidence one way or the other, it should rarely be prescribed.

Possibly, it may be reasonable to give it to patients who cannot or will not tolerate *p*-aminosalicylic acid (P.A.S.) or streptomycin, but, even then, the indications for dipasic rather than isoniazid alone are doubtful, since, by its use, we may be risking resistance to both P.A.S. and isoniazid.

A well-planned trial of this drug would be valuable, but most clinicians might be reluctant to include their patients in the trial in view of their confidence in the well-proven and accepted combinations of streptomycin, P.A.S., and isoniazid.

The Marsden Hospital, Burnley, Lancs. W. H. HELM.

INTERACTION OF DEPOLARISING AND NON-DEPOLARISING RELAXANTS

SIR,—In their letter of Oct. 13 Dr. Hamer Hodges and Dr. Foldes express the view that a "prolonged apnœa" following the use of the combination of succinylcholine and *d*-tubocurarine might up to now be regarded as "unexpected." But the evidence they bring forward only helps to confirm what has been known for a number of years.

After the introduction of the non-depolarising drugs (e.g., *d*-tubocurarine) and the depolarising ones (e.g., decamethonium and succinylcholine) the observation was made in animals that these two sorts of block were antagonistic.[1] This finding can easily be demonstrated in man by comparing the effects on the respiratory muscles of a single dose of succinylcholine before and after a small dose of *d*-tubocurarine. In the latter case more succinylcholine is required to produce the same degree of respiratory depression, thus signifying that the two types of block are antagonistic.

The story, however, changes if repeated doses of a depolarising agent are given, as for example in the prolonged use of a succinylcholine drip. In 1953 it was demonstrated that in certain species of animals repeated doses of a depolarising agent (C10) led to a change in the response of the motor end-plate.[2] A similar type of response could also be demonstrated following a single injection in certain specific cases in man—e.g., myasthenia gravis.[3] The type of neuromuscular block that occurred had at first the properties of depolarisation, but after a variable period this changed to one of non-depolarisation. This type of block was called "dual" because it emphasised the two distinct phases in the episode.

In the years 1952–55 there was an increasing number of reports in the literature of cases of prolonged apnœa following large doses of both decamethonium and succinylcholine which could easily be reversed by neostigmine. In 1954, I suggested that these were in fact examples of a "dual block" in which the motor end-plate was changing its response from one of depolarisation to that of a non-depolarisation block, and the warning of the possible occurrence of this type of block has been made on several occasions.[4–7] Since then Brennan (1956)[8] has demonstrated that repeated doses of succinylcholine in man can lead to a change in the response of the motor end-plate.

If, therefore, prolonged administration of succinylcholine by itself can lead to a change in the type of neuromuscular block from one of depolarisation to non-depolarisation (i.e., "dual block"), it is hardly surprising that the addition of even a small dose of *d*-tubocurarine at this later stage should cause a prolonged response.

1. Paton, W. D. M., Zaimis, E. *Pharmacol. Rev.* 1952, **4**, 219.
2. Zaimis, E. *J. Physiol.* 1953, **122**, 238.
3. Churchill-Davidson, H. C., Richardson, A. T. *Ibid*, p. 252.
4. Churchill-Davidson, H. C. *Bull. Acad. Med. Toronto*, 1954, **28**, 60.
5. Churchill-Davidson, H. C. *Penn. med. Soc. J.* 1955, **58**, 293.
6. Churchill-Davidson, H. C. *Anesthesiology*, 1956, **17**, 88.
7. Churchill-Davidson, H. C. *Proc. R. Soc. Med.* 1955, **48**, 621.
8. Brennan, H. J. *Brit. J. Anæsth.* 1956, **28**, 159.

In short, a single dose of a depolarising drug produces a pure depolarisation block in all cases except those of myasthenia gravis, where the response is one of a "dual block" at the first injection. Repeated doses in normal subjects gradually lead to a change in the response of the motor end-plate until finally a non-depolarisation block is present. It is impossible to forecast in any one individual exactly when this change-over will take place, but fortunately it is usually only after heavy dosage. However, in view of this possibility I have abandoned the prolonged use of succinylcholine.

It is true to say, therefore, that a single dose of a depolarising drug will antagonise a non-depolarising one, but owing to the fickleness of the motor end-plate this does not necessarily hold true if more than one injection is given.

Clinically, the practice of using a single dose of succinylcholine for intubation followed by *d*-tubocurarine for prolonged abdominal relaxation seems theoretically sound, provided the effects of the succinylcholine are allowed to wear off before the other relaxant is given. The occurrence of a "dual" block is not dangerous in itself provided its presence is realised and adequate steps are taken to reverse it, because it appears that neostigmine is equally effective in reversing both a pure non-depolarisation and a "dual" block. In this respect it is wiser first to use a test dose of 'Tensilon'—which acts for only a few minutes—rather than neostigmine, in case the prolonged response is due to some cause other than a neuromuscular block.[8] Similarly, the practice of using a single dose of succinylcholine to aid closure of the peritoneum, although unlikely to lead to trouble unless large doses have been used in the early stages of the anæsthesia, should not be encouraged, since equally good results can be obtained by the early administration of a further dose of *d*-tubocurarine.

Department of Anæsthetics,
St. Thomas's Hospital,
London, S.E.1. H. C. CHURCHILL-DAVIDSON.

RUPTURE OF ABDOMINAL AORTA SIMULATING RENAL COLIC

SIR,—Dr. King and Mr. Robinson may like to know that we have reported [9] a case closely resembling those they describe.[10] A man, aged 57, suddenly became unconscious; and after regaining consciousness, an hour later, he had anuria and an intense pain in his left hypochondrium suggesting renal colic, whereas electrocardiography seemed to indicate myocardial infarction. Forty-eight hours later he suddenly died of internal hæmorrhage. Before death our diagnosis was two-stage rupture of the aorta causing pressure on the left kidney. This diagnosis was confirmed by necropsy.

Warsaw. Z. S. LEWICKI.

RE-FILLING OF PRACTICE VACANCIES

SIR,—Under the present system, applications are received by the local executive committees, who prepare a short list, interview selected candidates, and choose the successful person, whose name is sent to the General Practices Committee in London.

A much fairer method would be for applications to be sent in the first place to the General Practices Committee in London, who would prepare a short list which could be sent to the local executive committee. The local committee would interview the listed candidates and select one. This would put an end to the canvassing and lobbying that goes on at present, as each candidate's application would receive an impartial scrutiny without any local prejudice or favouritism.

In the words of the late Lord Hewitt "It is not merely of some importance but is of fundamental importance that justice should not only be done but should manifestly and undoubtedly be seen to be done."

Leeds. ISAAC ROSE.

9. Lewicki, Z. S., Zawadzki, Z. A. *Polski Tygodnik Lekarski (Pol. med. Wkly)*, 1954, 9, 716.
10. King, R. C., Robinson, J. O. *Lancet*, 1956, i, 1047.

INVESTIGATIONS FOR PRACTITIONERS

SIR,—It is very interesting to discover how large a proportion of X-ray examinations in any clinic show an abnormality; but, unless I am mistaken in reading your annotation last week, it does not appear to have occurred to anyone that one of the most important functions of radiology is to exclude abnormality, and therefore normal films are commonly hoped for by clinicians asking for X-ray examination. The proportion of normals to abnormals is a false basis to work on.

Newcastle upon Tyne, 3. MICHAEL JAMES.

TERRA SIGILLATA

SIR,—Dr. D. A. K. Black, in his interesting article of Oct. 27, states that this substance is "mentioned by Dioscorides in 40 B.C." I think he has mistaken B.C. for A.D., for it is usually stated that Dioscorides was a physician in the army of Nero, although this may be doubted, resting as it does on Dioscorides's vague statement that he once followed the profession of arms. It seems that there was, at about the middle of the 1st century A.D., a governor of Cilicia named Areus, and it is to an Areus that Dioscorides addresses the preface of his *Six Books*. On such frail evidence does the dating of Dioscorides depend! However, Areus was not an uncommon name, and the person named by Dioscorides is stated to be a physician, an unlikely person to have been made the governor of a province.

On the other hand, the resemblances between certain parts of Pliny's *Historia Naturalis* and Dioscorides's *Six Books* show that one certainly copied from the other. Since Pliny wrote in Italy and nowhere mentions the name of Dioscorides, while the latter lived in an obscure town in Asia Minor, there is some reason to suppose that Pliny was the originator and Dioscorides the plagiarist. The majority of the *Historia Naturalis* was published posthumously (i.e., after A.D. 79), so Dioscorides may well have been writing in the early 2nd century A.D., perhaps not long before the birth of Galen.

Newcastle upon Tyne, 1. M. H. ARMSTRONG DAVISON.

CORTISONE ACETATE IN CHRONIC ASTHMA

SIR,—The Medical Research Council report (Oct. 20) is of great value. A worthwhile attempt has been made to assess the rôle of cortisone in the treatment of asthma scientifically.

It is generally agreed, however, that in asthma there are many pitfalls in assessing the results of any treatment, owing to the episodic nature and intrinsic vagaries of the illness. There is a striking discrepancy in the M.R.C. investigation between the objective assessments and the clinical impressions of the "cortisone" and control groups investigated after six months' treatment. Objective evaluation showed no significant difference between the groups, yet subjective appraisal by the clinicians indicated a definite advantage in favour of the cortisone group. It would be interesting to know what factors may have determined such favourable personal impressions. Discussion of this point in the paper vaguely hints that "in a few cases" the presence of œdema or euphoria in the patients may have influenced the clinicians. Apart from one case of frank neurosis there is no specific mention of euphoriant or other psychological side-effects of the drug. How often, in fact, did personality changes occur?

In a statistical study subjective criteria must necessarily be less significant than objective measurements. Yet the only really objective criterion employed—i.e., vital-capacity measurement—seems to have been inadequately used by the investigators. Measurements of vital capacity were carried out before and after, but not during, treatment. It is widely recognised that a random

measurement of vital capacity is of small value. At best, it is of course possible that the investigators did indeed carry out vital-capacity recordings every fortnight, but did not report this in their communication.

Glasgow. A. BALFOUR SCLARE.

MEDICAL EDUCATION

SIR,—There has been much discussion recently about the medical curriculum. There is, naturally, considerable difference of opinion as to what should be included and what should be omitted. One aspect of the subject does not seem to have received due consideration, however. This is the need for teaching in the problems of old age and chronic disease. Many newly registered practitioners meet these for the first time on entering general practice, and find themselves at a loss in dealing with their elderly patients. Since nearly half the work of general practitioners consists of such problems, it is clearly desirable to give students some preparation for this kind of work.

In the preface to part II of the report of the Ministry of Health for 1953, the chief medical officer drew attention to the frequency and great significance of such disease conditions as bronchitis, arthritis, vascular lesions of the nervous system, and cancer in the life of the nation. These are the very problems with which the new entrant to general practice is unfamiliar. They are also just those diseases which are becoming more important with an ageing population. Unfortunately they do not seem to be encountered very often by students in the wards of teaching hospitals. Hence I would like to put in a plea for more instruction about these long-term disorders which bulk so large in general practice.

London, S.W.16. TREVOR H. HOWELL.

THE USE OF PLASMA

SIR,—I agree with Admiral Rainsford (Oct. 27) that we must bear in mind all the dangers of transfusion with blood or blood products, but I consider his letter misleading. In advocating the substitution of dextran for plasma in the treatment of "oligæmic shock," he implies that this condition should normally be treated by one or the other. In trauma, oligæmia is but rarely due to differential loss of plasma, and where an effective transfusion service is available, transfusion of whole blood is the treatment of choice for blood-loss. Often it is the only treatment capable of saving life in severe injuries. His concluding paragraph compares the safety of dextran with the dangers from blood and blood products. He suggests that many lives would be saved by "substituting, wherever possible, for these potentially dangerous materials the safe and inexpensive alternatives that are available."

In moderate and severe non-thermal injuries, there is no effective alternative to whole blood. Only where blood is not available should dextran be considered.

Today, lives are being lost from inadequate realisation of the need for blood replacement, and from an excessive emphasis on the dangers attached to transfusion in experienced hands. I am wondering if this letter could have been inspired by an article in your issue of Sept. 22, which reported the results of administering dextran to six volunteers. Five of these six had reactions, although none of these were urticarial. The article was headed "Dextran without Reactions," a title which could well be misleading. Dextran remains a "plasma substitute," and both are poor substitutes for blood.

Birmingham RUSCOE CLARKE.

*** An error in Admiral Rainsford's letter of Oct. 27 must here be set right. "The figures quoted by me" he says, "should of course have been 0·12% and 0·16% respectively and not 1·2% and 1·6%."—ED. L.

ENDOBRONCHIAL TUBERCULOSIS IN CHILDREN

SIR,—Your annotation of Oct. 13 rightly focused attention on the enlarged caseous lymph-nodes in primary tuberculosis, attributing the segmental lesions to pressure with or without perforation.

We feel, however, that the interpretation of these segmental shadows (so-called epituberculosis) as lobar or segmental collapse is erroneous. We have had the opportunity of examining the lesion responsible for these shadows in a large number of children. The lesions we have examined have been from children with persistent X-ray shadows, either segmental or lobar, of some months' duration. In such cases we have never encountered simple collapse: the affected lung has always been consolidated and usually there is only a minor element of collapse. (In other words the lung parenchyma involved is only slightly smaller than when fully aerated.) The pathology of these consolidated segments or lobes is variable and falls into three main categories: (1) a tuberculous pneumonia entirely non-caseous; (2) a tuberculous pneumonia predominantly caseous; and (3) a partly caseous and partly non-caseous tuberculous pneumonia.

The non-caseous pneumonias have a characteristic macroscopic appearance, with a distinct lobular pattern due to thickening of the interlobular septa, and are of a uniformly greyish colour. Microscopically the picture is fairly characteristic and consists in varying combinations of œdema fluid with foamy macrophages in normal alveoli, variable numbers of epithelioid tubercles often becoming confluent. There is a variable amount of fibrosis, often principally affecting the interlobular septa. In some instances there is much lymphocytic infiltration. Occasionally, from cases where the picture has remained unchanged for some months, the air-spaces are lined by metaplastic epithelium of low cuboidal type. Reticulin stains in these non-caseous consolidations show variable degrees of distortion of the lung architecture.

In the caseous pneumonias the microscopic picture is that of caseous tuberculosis.

We have found these types indistinguishable, both clinically and radiologically, when they first appear.

We would not agree that the offending caseous nodes usually contain few tubercle bacilli; often there are large numbers in liquefying caseous nodes and the gastric aspirates are usually positive. This was also the experience of Jones, Rafferty, and Willis,[1] who found 66% sputum-positive. Our findings in this disease at thoracotomy agree with the conclusions of many observers. Rich [2] has reviewed the evidence in favour of tuberculous pneumonia, and more recently Huish [3] and Hirdes [4] found a tuberculous pneumonia in resected material.

We regard these lesions as aspiration tuberculous pneumonias due to perforation of caseous lymph-nodes distal to lobar or segmental bronchial obstruction. Two factors probably share the responsibility for this aspiration pneumonia—namely, the presence of viable tubercle bacilli in the node and also the tuberculolipids and proteins present. The former as a factor is suggested by the caseous lesions in the lung containing viable tubercle bacilli, as reported by Rubinstein [5] and Spence.[6] The part played by the chemical constituents of caseous material is suggested by the work of Oppenheimer.[7]

The changes that occur as the X-ray opacity "clears" are by no means uniform. Our observations of the disease at varying phases suggest many possible end-results dependent on the initial damage.

Those cases where the exudate is mainly fluid, and with large numbers of foamy mononuclears and only occasional epi-

1. Jones, E. M., Rafferty, T. N., Willis, H. S. *Amer. Rev. Tuberc.* 1942, **46**, 392.
2. Rich, A. R. Pathogenesis of Tuberculosis. Springfield, Ill., 1951.
3. Huish, D. W. *Thorax*, 1956, **11**, 186.
4. Hirdes, J. J., Bronkhorst, C. L. Traitement de la tuberculose de l'enfant. Paris, 1956.
5. Rubinstein, H. *Beitr. Klin. Tuberk.* 1928, **70**, 773.
6. Spence, J. C. *Arch. Dis. Childh.* 1932, **7**, 1.
7. Oppenheimer, E. H. *Bull. Johns Hopk. Hosp.* 1935, **57**, 247.

thelioid tubercles in which reticulin stains demonstrate an essentially normal lung architecture, resolve as would a pneumococcal pneumonia.

Those with large areas of confluence of epithelioid tubercles and a distorted architecture, as shown by reticulin stains, resolve leaving a patchy fibrosis and a somewhat emphysematous lobe.

Those with more extensive epithelioid tuberculosis with areas of caseation on resolution of the exudate become shrunken, fibrosed, and bronchiectatic, with residual encapsulated caseous lesions.

These last cases show that the course of events is the reverse of the commonly held view that the initial shadow represents collapse and the clearing represents re-aeration. Our interpretation is a pneumonia as a cause of the shadow due to gland perforation, the clearing of the opacity accounted for by some resolution of exudate, together with a "contraction fibrosis."

In conclusion, though we have performed several hundred bronchoscopies in children with primary tuberculosis complicated by glandular perforation, we have found it of limited value as a therapeutic procedure. Our experience of thoracotomy in over one hundred and fifty children has convinced us that the bronchoscope cannot deal adequately with the situation.

Sully Hospital, near Penarth, Glam. R. M. E. SEAL
DILLWYN M. E. THOMAS.

THE USE OF LIQUORICE IN WEIGHT REDUCTION

SIR,—The production of anorexia by such drugs as dextroamphetamine sulphate is now popular for weight reduction. Liquorice, in the form of liquorice lozenges *B.P.C.* (Brompton cough lozenges), can be very effective for the same purpose if taken shortly before a meal, since the strong taste of liquorice is persistent enough to prevent the patient from tasting his food. The treatment is cheap and safe, and less unpleasant in practice than might appear at first sight; it should be used only as part of a general weight-reducing régime.

Marlow, Bucks. B. JAMES.

ANARTHRITIC RHEUMATOID DISEASE

SIR,—I agree with Dr. Kersley (Oct. 20) that steroids may be of value in this condition, especially if muscle movement is excessively painful. In such cases physiotherapy may be initiated with less discomfort to the patient. Patients nevertheless may, as in rheumatoid arthritis, become ultimately dependent on the drug in so long an illness. 30 patients followed up to date have not required steroids and most of them, including a woman of 85, have done well on salicylates alone.

To the differential diagnosis of myelomatosis and carcinomatosis I should like to add pulmonary tuberculosis. The unexplained fever, weight-loss, cough, and indefinite lung shadows are sometimes suggestive of this disease.

I agree with Dr. Paulley (Nov. 3) that the cranial manifestations of cranial arteritis may be late. But the mean duration of the illness in my series was 5·25 years with a range of 3 months to 35 years. This is more like rheumatoid arthritis than Harrison's mean duration of 7·2 months, with a range of 8 weeks to 30 months, in 75 cases of cranial arteritis.[1] Moreover, 68 of his series had signs referable to the temporal arteries and 25 had visual disturbances. These signs were absent in 30 patients with anarthritic rheumatoid disease seen to date, most of whom have been followed up for several years. The salicylate response in 11 of 13 patients again differs from cranial arteritis. The cases of cranial arteritis seen in the wards here over this period have followed a rather different course.

1. Harrison, C. V. *J. clin. Path.* 1947–48, **1**, 197.

I deliberately excluded cases of true rheumatoid arthritis with very long prodromal symptoms similar to Dr. Wheatley's case (Oct. 20), and in most cases of my series the disease ran its full course before any conclusion was reached. If the earliest pathological change in rheumatoid arthritis is an arteritis,[2,3] then the general symptoms and signs will naturally be similar to other forms of arteritis, giant-cell or otherwise.

The Radcliffe Infirmary, Oxford. L. BAGRATUNI.

NIKETHAMIDE IN RHEUMATOID ARTHRITIS

SIR,—Dr. Morton [4] has made the astonishing claim that he has cured 38 consecutive cases of rheumatoid arthritis in Africans with injections of nikethamide ('Coramine'). He suggested that it would be interesting to know whether Europeans and Asiatics would respond in the same way.

So far 3 Europeans with severe rheumatoid arthritis have been admitted to the Middlesex Hospital, under the care of Dr. A. C. Boyle, and treated with intramuscular injections of 2 ml. (0·5 g.) of nikethamide 3 times a week for four weeks; this is the dosage said to be effective in the African patients.

They also received bed rest, splintage of active joints, aspirin, and appropriate physiotherapy. All 3 had raised erythrocyte-sedimentation rates and X-ray evidence of osteoporosis, diminished joint spaces, and erosions in two or more joints.

CASE 1.—A married woman of 50 with rheumatoid arthritis for sixteen years. Hands, wrists, shoulders, knees, and feet were severely affected. There was no clinical improvement after one month and she was complaining of more pain in her joints.

CASE 2.—A spinster of 60 with rheumatoid arthritis for six years. Again many joints were severely affected and the slight improvement noted was no more than one would expect after one month's bed rest.

CASE 3.—A married man of 34 with a four-year history of mild rheumatoid arthritis with a severe relapse in the two months before admission. He had generalised muscle-wasting, bilateral ankle œdema, and acutely inflamed joints of his hands, wrists, knees, and feet. His condition deteriorated during the month he was receiving nikethamide but improved dramatically on oral cortisone, 25 mg. t.d.s.

The following laboratory findings do not demonstrate any favourable effect of nikethamide:

Case	Hæmoglobin (g. per 100 ml.)	E.S.R. (Wintrobe) (mm. in 1 hr.)	Serum-creatine (mg. per 100 ml.)
Case 1:			
On admission ..	10·0	35	1·43
After nikethamide ..	11·1	36	1·32
Case 2:			
On admission ..	13·0	40	1·09
After nikethamide ..	11·6	40	1·30
Case 3:			
On admission ..	11·1	36	1·16
After nikethamide ..	10·0	40	2·00

It is perhaps premature to draw any firm conclusions on negative findings in so small a series of cases. However, the dramatic improvement in case 3 on starting cortisone was in complete contrast with his steady deterioration during the previous month on nikethamide.

It is unfortunate that Dr. Morton was prevented by circumstances from carrying out any radiological or laboratory investigations in any of his cases, as this must cast some doubt on the diagnosis. Although his

2. Sokoloff, L., McCluskey, R. I., Bunin, J. J. *Arch. Path.* 1953, **55**, 475.
3. Sinclair, R. J. G., Cruickshank, B. *Quart. J. Med.* 1956, **49**, 313.
4. Morton, H. F. *Lancet*, 1956, **i**, 963.

patients appear to have had a rheumatoid type of arthritis, the skin changes he describes as being a fairly common finding are not usually seen in this country. The shiny atrophic skin of the hands and forearms, and the "crazed porcelain" appearance of the face are perhaps more suggestive of a superimposed vitamin deficiency. Nikethamide is the diethylamide of nicotinic acid and, like other derivatives of nicotinic acid, has been found to be effective in the treatment of pellagra.[5] It would be interesting to hear if Dr. Morton can obtain the same therapeutic results with nicotinic acid or, better still, nicotinic acid amide. Kurtz et al.[6] produced prolonged vasodilatation in patients with rheumatoid arthritis using a slow intravenous drip containing nicotinic acid and large oral doses of this drug. They claimed subjective and objective improvement in 25 of 35 patients treated, many of whom had been bedridden for years. It is well known, however, that in the course of a chronic disease any form of new treatment is enthusiastically welcomed by the patient and may appear at first to be producing benefit. There is at present no convincing evidence that single or multiple vitamin deficiencies play any part in the ætiology of rheumatoid arthritis.

St. Thomas's Hospital, London, S.E.1. D. MATTINGLY.

WALKING-AIDS

SIR,—At the risk of exposing my ignorance, I should like to ask Mrs. Collis and Dr. Dunham (Oct. 27) what infantile cerebral palsy is, if not a "permanent locomotor defect." I would suggest that there is a small group of children who will never attain the normal postures and movements of walking, and that for these children "supported self-propulsion" is preferable to immobility.

London N.3. G. W. PIPER.

UREA METABOLISM IN PROTEIN DEFICIENCY

SIR,—I was most interested in Dr. Widdowson's suggestion, in her letter of Sept. 22, that protein-deficient adult men may be able to utilise urea. Some time ago, at the Hot Climate Physiological Research Unit, Oshodi, Nigeria, we noted a discrepancy in balance trials on Africans between calorie and nitrogen retention on the one hand, and weight gain on the other[7 8]; we wondered whether alterations in body-water might not be the cause of this "discrepancy," and my colleague Dr. R. A. Kenney and I initiated body-water estimations using the oral-urea method. We found considerable variation in the time at which the peak concentration in the blood was reached, but the distribution volumes, calculated from this peak, were always high; we also monitored the urea concentration in the blood, taking frequent finger-prick samples, for two hours or more after the peak and found that urea disappeared far more quickly than could be accounted for by excretion of urinary nitrogen. We ourselves wondered whether urea might not be being utilised but hesitated to make the suggestion until we had carried out further trials; unfortunately these trials could not be made as the unit had to close down.

Our subjects were not clinically protein-deficient, but the concentration of urea in their blood was low (mean 14 mg. per 100 ml. blood[9 10]) and in ten-day digestibility trials[11] in which the mixed protein intake varied in different experiments from 10 to 100 g. per day, 44 g. of protein (36 g. animal, the remainder from cassava) was required for nitrogen balance, and there was nitrogen retention at all levels of intake above this, throughout the period of observation.

Late of Hot Climate Physiological Research Unit, Oshodi, Lagos, Nigeria. W. S. S. LADELL.

CHOREA GRAVIDARUM

SIR,—The report by Dr. Forrest and Dr. Hales (Oct. 27) of a severe case of chorea gravidarum which apparently responded to corticotrophin was of great interest. As they suggest, it appears that this condition is becoming rarer. Indeed, the incidence of about one in three thousand quoted by Willson and Preece[12] seems far too high for the present day.

Over the past eight years at the Rotunda Hospital there has been only one case of chorea gravidarum in about 40,000 pregnancies. This patient made a good recovery with the usual sedative treatment, but the pregnancy ended in a stillbirth.

The rarity of this condition in pregnancy is all the more surprising, as rheumatic chorea is still seen fairly commonly in Dublin. It would be interesting to hear of the incidence of chorea gravidarum in other centres within the past few years.

Dublin. P. B. B. GATENBY.

GAS GANGRENE AFTER INJECTION

SIR,—I refer to your summary last week (p. 941) of the opinion of a coroner that the death of a boy from gas gangrene, following injection in hospital, was a "millions to one" chance and that there was "no need whatever for any kind of public uneasiness on account of this case."

Many of those concerned with the preparation of surgical instruments and equipment in British hospitals consider that at present we do not provide adequate safeguard against infection due to heat sensitive micro-organisms, far less against the more heat-resistant species,[13 14] the reason being that we are not provided with the proper range of adequately designed apparatus for sterilisation—dressing sterilisers, instrument washer sterilisers, autoclaves, and hot-air ovens with fans. It would therefore be helpful if the pathologist who investigated the method used for the preparation of syringes in this fatal case would publish the essential details.

Most microbes commonly contaminating syringes and capable of causing an infection are easily killed by boiling in water for a few minutes, but several of the more heat-resistant species, such as those associated with gas gangrene, may withstand such treatment. Some common contaminants actually resist boiling for many hours.[15] In spite of this, several official bodies in this country persist in referring to instrument, bowl, and bottle boilers as "sterilisers." Whether in preparing his syringes or other instruments, the use of an instrument boiler instead of a pressure steam steriliser or oven adequately safeguards his patient, is a matter for the decision of the clinician himself but the sense of security so widely engendered by referring to instrument boilers as "sterilisers" is unquestionably false and is dangerously misleading. If instruments or materials are to be called sterile, apparatus capable of ensuring sterility must surely be used.

5. Bicknell, F., Prescott, F. The Vitamins in Medicine. London, 1953; p. 341.
6. Kurtz, C. M., Orth, O. S., Sepulveda, G. *Wis. J. med.* 1945, **44**, 761, quoted in *J. Amer. med. Ass.* **129**, 578.
7. Ladell, W. S. S. *V. Congr. int. Méd. trop. Paludisme, Istanbul*, 1954, vol. ii, p. 528.
8. Barnicot, N. A., Ladell, W. S. S. *J. trop. Med. Hyg.* 1954, **57**, 180, 210.
9. Phillips, P. G., Kenney, R. A. *Lancet*, 1952, ii, 1230.
10. Kenney, R. A. *Brit. med. J.* 1954, i, 1130.
11. Ladell, W. S. S., Phillips, P. G. Ground-nut Flour as a Source of Protein in the Nigerian Diet: report to West African Council for Medical Research. 1956.
12. Willson, P., Preece, A. A. *Arch. intern. Med.* 1932, **49**, 471, 671.
13. Howie, J. W., Timbury, M. C. *Lancet*, Sept. 29, 1956, p. 669.
14. Bowie, J. H. *Pharm. J.* 1955, **174**, 473, 489.
15. Bigelow, W. D., Esty, J. R. *J. infect. Dis.* 1920, **27**, 602.

Prof. J. W. Howie referred me to the work of Cooper[16] and of Evans et al.[17] Miss Cooper described a similar case of gas gangrene, following an injection of adrenaline as in the present case, in which the needle or syringe seemed a likely cause of infection. She drew attention to (*a*) the vastly enhancing effect of adrenaline on the pathogenesis of gas gangrene in guineapigs when the drug and the micro-organisms are injected together; and (*b*) the literature in which some of these numerous fatal cases are reported. Evans et al. carried out intriguing experiments elucidating the mechanism involved.

Department of Bacteriology,
Royal Infirmary,
Edinburgh.

J. H. BOWIE.

HYPERCALCÆMIA OF INFANCY

SIR,—I do not admit to the mistakes of logic or chemistry which Dr. Sinclair alleges (Oct. 27). In my letter of Oct. 13 I had intended to convey the idea of unhampered oxidation of previously hydrogenated fats in margarine. But through haste I fell into an error, not of conception but of delivery, in the form of confusing verbal contraction.

Dr. Sinclair has, I think, been equally hasty in interpreting my statements, and I hope that as a responsible scientist he will not continue to insist on the obscurantist habit of using a generic term in scientific literature and in the labelling of foods. I maintain that such legends as "Added Vitamin D" and "Fortified with Vitamin D" have been major contributors to the present confusion regarding antirachitic substances. If Dr. Sinclair is meticulous in discussing the linoleic acids, why is he willing to lump all antirachitic substances together? Would he swallow, with any peace of mind, a number of capsules, labelled simply "Linoleic Acid"?

Bicknell and Prescott[18] also furnished at least part of the basis for my conception of calciferol as a non-physiological substance. The existence in food, excreta, or any biological products such as eggs or the secretion of the human skin, of any substance is not a criterion of its essential physiological or toxicological importance. Probably many adventitious substances pass through living organisms without any appreciable or important effect. The calciferol in the hen's egg may be highly advantageous to the chick, but I doubt the wisdom of attributing to it a comparable importance in human physiology.

Dr. Sinclair is apparently unable to agree with me that even the slightest difference in molecular structure of a substance *must* involve a difference in the metabolic outcome—though the difference may not be demonstrable. No doubt he is right in saying that the effects of pyridoxal and pyridoxine—as at present known—are identical; but I find it difficult to believe that the necessary manipulation of either aldehyde or carboxyl group can fail to have some additional metabolic effect. An example more germane to my argument is that of nicotonic acid and nicotinamide; they both prevent pellagra, but the former is liable to cause flushing, whereas the latter is not. How can Dr. Sinclair reconcile his statement regarding difference in potency of vitamin D_3 and vitamin D_2 with his denial of a divergence of action according to chemical constitution? Anti-rachisis has, I fear, been allowed to become an end in itself, at the expense of our indispensable detoxicating capacities.

I am glad, however, to concur most heartily with what Dr. Sinclair says about our welfare foods and the need for fundamental nutritional research.

Festiniog, Merioneth. D. MARCUS EVANS.

16. Cooper, E. V. *Lancet*, 1946, i, 459.
17. Evans, D. G., Miles, A. A., Niven, J. S. F. *Brit. J. exp. Path.* 1948, **29**, 20.
18. Bicknell, F., Prescott, F. Vitamins in Medicine. London, 1947; pp. 636, 654.

RUPTURED UMBILICAL HERNIA

SIR,—According to de Glanville[1] only 5 cases of ruptured umbilical hernia have been recorded; so I should like to report the following:

In February, 1949, an Indian boy aged $1\frac{1}{2}$ years was admitted with pneumonia, tense ascites, and an irreducible umbilical hernia. This was shaped like the snout of a tapir, drooping till it touched his penis; its end was ulcerated, and the surrounding skin red, stiff, and pitting. He was treated with penicillin and the chest cleared. The hernia became flexible and reducible, and the ulcer was healing rapidly, when fever recurred. Malaria parasites were found and he soon responded to quinine, but the ascites and severe anæmia persisted.

One night, his mother, who was in hospital with him, took him out of bed and laid him on the stone floor "because he preferred it." As she did so a large quantity, probably about $1\frac{1}{2}$ pints, of fibrinous fluid and fresh blood appeared from beneath the bandage, and his general condition became very grave. We tied off some bleeding points in the omentum, replaced that and some intestine which were lying among septic dressings on the floor, and put on a sterile pad and binder.

Next day he had improved. The removal of ascitic fluid showed a still greatly enlarged liver, and a blood-test indicated kala azar, which had recently been spreading in this area in epidemic form. After a course of pentavalent antimony, the liver became smaller and his condition improved so much that we were able to repair the hernia under general anæsthesia. Many adhesions made the repair a little difficult, but the boy was perfectly well when discharged after 3 months in hospital.

Ramnad, South India. M. G. JONES.

INTESTINAL OBSTRUCTION BY FOOD

SIR,—Mr. Rowling's article (Aug. 11) and the subsequent letters prompt me to report the following case.

A 53-year-old labourer was admitted to Blackburn Royal Infirmary in a severely shocked condition on the morning of Sept. 20, 1956. He had been complaining of intermittent colicky abdominal pain for three days. On the first day the pain was epigastric, was relieved by "health salts," and did not prevent him from sleeping at night. On the second day the pain was only slight, but he remained in bed; he was again able to sleep that night. On the third day there was a further attack of acute and severe colicky abdominal pain which, however, passed off, so that he was able to get up that evening. Early (about 1 A.M.) on the morning of the fourth day (day of admission) the pain returned with greater severity than ever, and now seemed to have shifted to the lower abdomen. The severe colicky pain continued throughout the night and up to the time of admission. Almost three years previously (December, 1953) he had had a partial gastrectomy carried out for a large gastric ulcer. He had been well since the operation.

On examination, he was cyanosed and shocked. His abdomen was slightly distended and rigid. He vomited some light-brownish fluid. Immediate steps were taken to treat the shock, but he died an hour after admission.

At necropsy, the peritoneal cavity contained a small amount of dark-amber, clear, watery fluid. The distal portion of the stomach had been removed, and the anastomosis of stomach with intestine was quite sound. The small intestine was everywhere inflamed, and distended with a large amount of light-brownish turbid fluid. At the ileocolic valve there was a firm impacted bolus, measuring $6 \times 3{\cdot}5 \times 3$ cm., consisting of about a third of an unchewed orange. Many of the natural teeth were present, but in a very poor state of repair.

This case adds to the list of reported cases of this condition—a condition which seems to be not uncommon and which must surely be regarded as a real hazard to patients who have undergone gastrectomy. It also emphasises the tragic result that can follow delay or incorrect diagnosis. The case resembles many others in that the patient had undergone gastrectomy some time previously, and in that the obstruction was caused by an orange, although in this case, as in case 1 of Mr. Rowling, it seems that the mode in which the food was consumed, rather than the food itself, was to blame.

1. de Glanville, H. *Lancet*, 1955, ii, 1321.

It seems to me that, after partial gastrectomy, it might be a good policy to advise patients not to chew citrus fruits at all, but merely to consume the juice. Such advice, however, is readily forgotten or ignored, as indeed is borne out by Mr. O'Donnell's case (Sept. 1).

I thank Mr. J. E. Sykes for permission to publish.

Department of Pathology,
Blackburn Royal Infirmary. SIDNEY I. DAVIES.

SIR,—Having read Mr. Rowling's article and the correspondence which followed, I am prompted to report another case of small-bowel obstruction due to impacted orange-pith in a patient who had undergone a partial gastrectomy. The obstruction actually occurred while the patient was in hospital recovering from another operation.

A housewife, aged 48, was admitted to the Derbyshire Royal Infirmary on Aug. 20, 1956, for treatment of a uterine prolapse. She had had a partial gastrectomy (anterior Polya with a valve) on Dec. 17, 1953.

On Aug. 30 a Mayo vaginal hysterectomy was performed, with right salpingo-oöphorectomy, and on Sept. 26, when she was almost ready for discharge, she began to have colicky upper-abdominal pain. Next day her symptoms were intensified and a tentative diagnosis of small-bowel obstruction due to postoperative adhesions was made. Laparotomy revealed a sausage-shaped mass about 3 in. long, impacted about the middle of the small bowel. This was removed through a longitudinal incision in the bowel wall, and found to consist of three segments of orange, matted firmly together. The bowel was repaired in the transverse axis. The patient went home on the eleventh postoperative day, vowing never to eat an orange again.

She was edentulous, and admitted having swallowed each segment of orange whole, without attempting to chew it.

Derbyshire Royal Infirmary, Derby. DENIS F. MACCARTHY
Surgical Registrar.

THE EXTRA SHILLINGS

SIR,—Your leading article last week points to certain inequitable features of prescription charges which already apply and which will be enhanced. I would present further aspects:

Already there are great differences in the cost of medicine issued to patients according to their nature and the periods for which they are prescribed. In hospitals it is quite common to issue medicines for two or three months, and unfairness is apparent when shorter periods require a similar charge. If an increase in revenue must be obtained by this means, a fairer solution would be to use the *period* as a basis for the charge—e.g., 1*s.* per month. Diabetics, cardiacs, and others needing interminable treatment could then be assured of all their requirements for the relatively modest sum of 12*s.* per annum. In other cases where less essential adjuvants are prescribed (e.g., excessive vitamin therapy) some restraint might be imposed by a limit on the number of items.

Among the anomalies of the charge of 1*s.* per item are those which arise when combined tablets can replace items prescribed singly, e.g., tab. phenytoin. c. phenobarbiton. or ferrous sulphate with vitamin C. The sympathetic doctor will be inclined to prescribe the combination where possible, but dosage and directions will sometimes render this difficult. Furthermore the market will be flooded with an even greater number of polypharmaceuticals, in inconceivable variation of strength and substance, which will render the pharmacist's stock-keeping hazardous and possibly prove a source of argument or even litigation.

An existing anomaly, which appears to be irrational, is that the issue of dressings alone is exempt from the charge. What reason is there for the charge on a bottle of lotion of negligible cost, while a roll of gauze and bandages goes out uncharged?

London, N.12. D. R. MATTHEWS
Hospital Chief Pharmacist.

TRIIODOTHYRONINE IN MYXŒDEMA COMA

SIR,—We have tried triiodothyronine in a case such as that described by Dr. Dyson and Dr. Wood (Oct. 13). The facts were briefly as follows:

A man, aged 49, was admitted in myxœdema coma. Blood-pressure unrecordable, pulse-rate 48 per min., rectal temperature 84°F. On the second day after admission triiodothyronine was made available by the courtesy of Messrs. Glaxo Ltd. Before that he had 0·2 mg. of thyroxine orally. His rectal temperature at that time was 92°F, blood-pressure 90/60; pulse-rate 60. We gave the patient 50 μg. intravenously. Five hours afterwards he started to complain of anginal pain and dyspnœa, and signs of cardiac failure developed. Two days later the patient died.

Our experience substantiates the warning in your leader that the use of large doses of thyroid hormone is certainly not the answer to the treatment of this intractable condition. It shows that even the middle course suggested by you of giving 0·1 mg. triiodothyronine may be too much, if it is given intravenously.

Royal Berkshire Hospital, Reading. A. ANDERSON
W. HAUSMANN.

CLINICOSIS

SIR,—As a recent recruit to the public-health service, I do three clinic sessions each week; and after five months I have to agree that some of the criticisms made in recent correspondence are disturbingly true. There can be no doubt that the place of the local-authority clinic in the National Health Service should be reviewed; but what is needed is objective thinking and not jibes about office hours, postgraduate education, and obtaining but not earning a living.

It is obvious that under ideal conditions the work done by the clinic doctor should be done by the general practitioner; but it is also obvious that it would be almost impossible for the general practitioner to add these duties to his already busy day. I can see no reason, therefore, why practitioners who are willing to send all their very-minor-surgery cases to hospital casualty departments should resent the help of the clinic in routine preventive and welfare measures. The doctor at the clinic, if he appreciates the nature of his work, seeks to do no more than relieve the family doctor of the routine procedures connected with maternity and child welfare and thereby ensure that they are not crowded out by the more urgent calls made on the practitioner's time. Furthermore, it must be admitted that this type of work can be done more efficiently in a clinic, and the popularity that these clinics continue to enjoy in so many areas suggests that the mothers enjoy the "social occasion" which the visit to clinic affords. I have been fortunate to start my public health in an area where the general practitioners use the clinic services in this way, and I believe that most practitioners adopt a similar attitude with the result that both themselves and their patients benefit.

Much of the unpleasantness that occurs at present would be avoided if the clinic doctors adhered rigidly to their duties and resisted the temptation to advise treatment; if general practitioners remembered that their patients are free human beings who have every right to decide who will vaccinate or immunise their child, and also free to seek advice from whomever they wish; and finally if all doctors remembered that patients often like to play one doctor off against the other, and therefore one should never condemn a colleague on the word of a patient. How many mothers have told me that their doctors have advised them to abandon breast-feeding because it upset the baby!

Heywood, Lancs. H. P. BURROWES.

SIR,—As a G.P. principal of three years' standing, I have for the past two years run an antenatal and post-

natal clinic in coöperation with a local midwife. Our reason for doing this is to eliminate duplication of work between us and to eliminate unnecessary attendances by the mothers. Both patients and midwife also find my premises easier of access than the midwives' clinic, and, incidentally, much pleasanter.

The clinic is held once a week in the afternoon, and continuity is assured. I can generally decide in advance whether to attend a confinement myself, and am sure of being called in when necessary. I feel that out of the chaos of the maternity services we have, in respect of my practice, created a little order.

This system of G.P.s holding special afternoon clinics could be extended to other special categories—e.g., the toddlers. But it is evident that before G.P.s can take on such extra work they *must* have assistance, both financial and clerical (and, invaluably, the services of the health visitors at their disposal). Running such clinics at special times for special categories could reduce the work of ordinary surgeries. I certainly find it is better to see all the mothers-to-be all together on a particular day than here and there in the middle of busy surgeries.

ANOTHER FAMILY DOCTOR.

SIR,—This is an age of nationalism when we may be saved only by internationalism. Similarly our profession will not come through unless we stop our little "nationalities" fighting for themselves alone. Practitioner, M.O.H., and consultant—let us get out of our present distrustful state of mind. Let us realise that we all have our place, and that two heads are often better than one. If the G.P. disagrees with the clinic or anyone else let him say so, without forgetting his manners—and without forgetting that if G.P.s had done this work, or if the local authorities had done it through G.P.s, the clinics would not exist. Let this great profession not mirror the present plight of mankind but show wisdom, tolerance, and understanding—at last, before it is too late.

Stratford-on-Avon, Warwickshire. M. H. F. COIGLEY.

SIR,—As one who spends much of her time listening to what patients say, I feel that the Widdicombe File often gives a better idea of what really happens to patients than one gets from the more exalted and less comprehensible contributions to your columns. But more can and should be said, I think, about antenatal and maternity work.

Though I believe that each of the three limbs of our tripartite maternity service is making fine efforts, I fancy that, between us, we are demanding too much clinical skill and acumen of the young mother, and imposing too great penalties if she does not happen to possess it. Let me state a few facts:

1. To get into the hospital of her choice the primipara must be able to diagnose pregnancy two weeks after the last menstrual period.

2. The multipara who needs hospital care has to know what conditions are likely to recur, and so give a very accurate history—within the first month. I made somebody go to hospital (she had already been booked for home delivery) because she told me that the anæsthetic was given to her *after* the first birth. As it turned out, she did have another placenta accreta—but there was no history.

3. The pregnant patient must differentiate between, say, the œdema of bilateral gnat-bites (treatable by her own doctor), and the œdema of pre-eclampsia (the concern of the hospital).

4. The family doctor who is an obstetrician will naturally be offended if she goes straight to an antenatal clinic or the midwife—and quite right too. But her previous non-obstetric doctor just was not interested, and everything she had last time seemed to be the affair of the hospital.

To learn all this the young mother has to sit in too many queues and meet too many telephone rebuffs.

I agree that the assistant medical officers and the health visitors are doing excellent work which should not be destroyed. But surely the information they collect and the trust they inculcate would be useful to the people who conduct labour? And surely one would conduct antenatal clinics better if one was an organic part of the service, and saw for oneself what happened to one's patients? Yet how many hospitals—or homes for that matter—would welcome the visit of a clinic medical officer? How many hospitals send reports of the progress of mother and baby to local-authority clinics in time for these to be useful?

We know that on the one hand midwives in certain districts are short of booked cases, while on the other hand hospitals are short of social workers and of midwives. The French, the Russians, and the Americans emphasise that the essence of natural childbirth lies in always having somebody at hand to still the rising fears of the mother. The English, who thought of Natural Childbirth, never provide such attention in hospital. It is because of this, and because hospital delivery disrupts the continuity of home contact and returns the mother to school discipline, that women prefer home delivery.

The whole service must become a unity, with an interchange between hospital and home midwives, and the health visitor providing the hospital with her vital data. The assistant medical officer should have fuller clinical responsibility, recognised by the hospital, which should make fuller use of the general-practitioner obstetricians. Then perhaps no patient need fall between the three jealous stools. Possibly domiciliary attitudes—which are far healthier psychologically—might creep into the hospital. Not least the hierarchy might crack, and trained midwife respect trained midwife—working together not as matron, assistant matron, sister, charge hand, and staff midwife but as colleagues respecting one another as do other hospital-trained people.

It was apt that your issue of Oct. 27 also contained a report on "primitive childbirth" in Nigeria (35 ruptured uteruses and 175 obstructed labours in 5585 hospital deliveries). Perhaps this will enable us to see our own difficulties in perspective.

London, W.2. ELIZABETH TYLDEN.

Appointments

CADDY, ISABEL, H., B.M. Oxfd: assistant M.O., Edmonton and Enfield.

CAMPBELL, ANGUS, M.B. Edin., D.R.: consultant radiologist, Astley Ainslie Hospital, Edinburgh.

FINKELSTEIN, Zygmunt, M.D. Warsaw, D.P.M.: senior assistant psychiatrist, Mapperley Hospital, Nottingham.

JAMES, T. M., M.R.C.S.: M.O., headquarters staff, Welsh Regional Hospital Board.

MACDONALD, T. R., M.B. St. And., F.F.A.R.C.S.: consultant anæsthetist, Stracathro Hospital, near Brechin, Angus.

MACLEOD, WILLIAM, M.B. Edin., M.R.C.P.E., D.M.R.D.: consultant radiologist, Princess Margaret Rose Hospital, Edinburgh.

SEFTON, ELIZABETH M., M.R.C.S., D.C.H., D.P.H.: assistant administrative M.O.H., Birmingham.

SENIOR, NORA, M.B. Leeds: assistant M.O., Kent education committee.

SPENCER, GLADYS M. G., M.R.C.S., D.P.H.: assistant M.O.H., Brighton.

ROPSCHITZ, D. H., M.D. Genoa, D.P.M.: senior assistant psychiatrist, Pastures Hospital, Mickleover, near Derby.

Leeds Regional Hospital Board:

ELLETT-BROWN, HAROLD, B.M. Oxfd, D.P.M.: assistant psychiatrist, Naburn and Bootham Park Hospital and York local health authority.

JONES, O. G., M.D. Leeds, M.R.C.P.E.: consultant chest physician based at Castle Hill Sanatorium, Northfield.

LAKE, F., M.B. Edin., D.T.M.&H., D.P.M.: assistant psychiatrist, Scalebor Park Hospital, Burley-in-Wharfedale.

STUBBS, R. F., M.B. Manc., D.M.R.D.: part-time consultant radiologist, Hull and East Riding areas.

The Birmingham Regional Hospital Board inform us that Dr. I. Brenda Schooling, whose appointment as consultant anæsthetist to the Birmingham (Selly Oak) hospital group we announced in our issue of Nov. 3, withdrew her application before her appointment was confirmed.

Obituary

JOHN CECIL CRUICKSHANK

M.D. Edin., D.T.M., Dip. Bact.

SINCE 1947 John Cruickshank had been professor of bacteriology as applied to hygiene at the London School of Hygiene and Tropical Medicine. His genius for teaching was backed by experience of tropical medicine in Africa and public-health bacteriology in this country, and during the past nine years this rare triple qualification had won him a lasting place in the affection and respect of his students.

[Lafayette

From George Watson's School in Edinburgh he went to Edinburgh University, but his studies were interrupted by service with the Gordon Highlanders during the 1914–18 war and he did not graduate till 1921. After holding house-appointments at the Sheffield Royal Infirmary and the Chesterfield Royal Hospital he went to the Liverpool School of Tropical Medicine to study for the D.T.M., which he acquired together with the Milne medal in 1923. The same year he joined the West African medical staff in the Gambia. W.R., a colleague who followed him there, relates:

"When I arrived I was met on board by Jack Cruickshank, taken to his house and my way made easy for me. This action was typical of the man. All through his life he was making things easier and happier for other people. Though his service in West Africa lasted only for a few years, he left a deep impression of loyal and painstaking work, whether in the main hospital or travelling in the bush. An epidemic of unknown origin and widely scattered in the Protectorate was shown by him to be one of relapsing fever and the first epidemic of this fever to be recorded in the territory. He maintained his interest in all matters affecting the African and visited the East Coast a few years ago."

In 1930 he returned to this country and he spent the next two years in general practice near Glasgow. In 1932 he joined a class of twelve postgraduate students taking the course for the diploma in bacteriology at the London School of Hygiene and Tropical Medicine. He soon showed his unusual ability, and when he had taken the diploma he was offered a vacant demonstratorship in the department of bacteriology. He accepted it gladly, and it was not long before his remarkable gifts as a teacher became clear. Working first as a demonstrator and later as a lecturer, he gradually took over more and more responsibility for the organisation of the classes held in the department. Though the students of public health and of tropical medicine were receiving then a great deal more teaching in bacteriology than they do now, it was to the diploma in bacteriology course in particular that Cruickshank devoted his attention. He took immense care in the preparation of material for the classes, and was able to explain the most difficult points with clearness and simplicity. Students perplexed by the new fields of learning to which they were being introduced would gather round him, and listen while he went through their difficulties and resolved them one by one. And when most of them had understood at last and had left for the day, he would spend another half-hour going over it all again with a lingering Indian whose anxious expression still revealed his lack of comprehension.

The time he spent on teaching gave him little leisure for research. He did, however, undertake during this early period at the school a valuable piece of work on the immunisation of mice against the whooping-cough bacillus. His opportunities for research were greatly increased by the war. Like most other members of the bacteriology department at the school, he joined the Emergency Public Health Laboratory Service. After eighteen months at Horsham, he was moved to Exeter, where he found many problems for investigation. In his field studies he brought to bear the experience he had gained in West Africa and in Glasgow. He was able to show how greatly epidemiology could be helped by modern bacteriological methods. Though he published several papers during this period of his career, the one which was recognised as being of especial merit was on a study of typhoid fever in Devon. By means of the Vi-phage typing method, carried out with the late Dr. Felix, he discovered at least eight foci of infection in the county constituted by chronic carriers of the typhoid bacillus. These gave rise to sporadic cases of typhoid fever which occurred sometimes long distances from the source of infection. Without the Vi-phage typing method, the source of infection would have been impossible to prove, and even the connection with it would often never have been suspected.

After the war Cruickshank returned to the department as a reader, and as the senior whole-time member of its staff. Prof. G. S. Wilson, who was in charge, had re-joined the staff only for part-time. Together, with the help of Dr. A. J. Rhodes as lecturer and helped by various friends not on the school's staff, they re-started the courses, of which much the most exacting was that for the diploma in bacteriology. The first post-war course and examination were held in 1946–47. Cruickshank himself was responsible for much of the organisation and all the day-to-day administration, as well as for a lion's share of the teaching. Towards the end of 1947 Cruickshank was appointed to his chair. But despite these new and growing responsibilities he did not sever his connection with the P.H.L.S., and till the beginning of his illness a year ago he continued to act as subeditor to section II of the *Monthly Bulletin* and as reference expert for the identification of organisms of the brucella group.

G. S. W. writes:

"Cruickshank was a man of whom one could not help being fond. He was so modest, so equable, so courteous, so unaffected, and so helpful that all who penetrated his slight external reserve found in him a trustworthy and most lovable friend. He was one of those Scotsmen whose virtues are thickly veiled, taking a long time to reveal themselves in their completeness. As one gradually got to know him better, one kept on discovering some new aspect of his character which added to the respect and affection one held him in already. Students from all over the world went to see him when they passed through London, remembering how much they owed him. In all his work he set himself a high standard and maintained it unfalteringly.

"He was the mainstay of the diploma in bacteriology course, and he taught generations of students many of whom have now established a reputation in their own spheres. Nothing was ever too much trouble for him. His objections to any suggested course were always voiced in the nicest possible way, and as an assistant he steered gracefully between open opposition on the one hand and servile submission on the other. Through all his work and play ran a quiet strain of humour which enabled him to recount quite ordinary events in an amusing manner. His descriptions of people and their doings were full of subdued fun, free from facetiousness, cynicism, or unkindliness. Indeed he was a delightful companion. He took his duties very seriously, and I suspect that beneath his calm exterior he worried a good deal. Possibly it was this that hastened his end. His death came as a great shock, and many of us know that something has been taken away which will never be replaced."

E. T. C. S., who came to the school as professor of bacteriology and immunology in 1946, recalling his own doubts whether he could undertake the job, writes:

"These were resolved by Cruickshank in a conversation I shall not forget. Because of his complete unselfishness, great wisdom, strength of purpose, and true Christian humility, the nine years of our association were for me, as I hope and believe they were for him, extraordinarily happy years. He was loyally devoted to the department and to the school, the staunchest friend, unswerving in principle, sensitive to everyone, and warmly interested in everyone and everything connected with the school. All kinds of people took him their personal problems. Students, technicians, fellow pro-

fessors, porters—all did it, knowing that his advice would be wise and mature and guided by a genuine concern for their welfare.

"His smallish figure, with hair not auburn and not grey but suggesting both, an amused expression easily pretending to be a little shocked; his soft voice with its northern inflection; or the sight of him talking to a group of students, his hands in his pockets under a white gown fastened at the back, both sleeves rolled up above the elbows—these are things which had become a loved part of our life in the school.

"Outside his work, I think that his interests were entirely absorbed in his family. The joy that he derived from recounting each new adventure and success of his children was contagiously obvious, in spite of his attempts to be modest on their account. I do not think that anyone could have had more happiness from a family than he had from his.

"He has died at the height of his career, and of his powers, at a time when, had he lived, he would have had years more of valuable research ahead of him. He was teaching until a few days before his death, and less than a week before he died he took the chair at a university lecture making a short introductory speech with the skill which came of fine judgment and sensitive feeling for other people."

Professor Cruickshank married Mabel Margaret Elizabeth Harvey in 1928, and she survives him with two sons and a daughter.

GERALD EDWARD FRIEND

M.A. Oxfd, M.R.C.S.

As doctor at Christ's Hospital, Horsham, Dr. Friend served the school well for over thirty years by his conscientious care for the health and welfare of the boys. By his detailed records of their physique, growth, and illnesses, and by his studies of and concern for their diet, he made a real contribution to the improvement of nutrition in adolescence.

He was born at Reading in 1875, the son of the Rev. Martin Friend, and he was educated at Bradfield and at Keble College, Oxford. He continued his medical studies at St. George's Hospital, qualified in 1905, and in 1908 became medical superintendent at St. George's—a post which he held until his appointment to Christ's Hospital in 1913. Of his years at Horsham T. L. S., who met him as a boy and later succeeded him as school doctor, writes:

"He spared no effort to preserve a high standard of health in the school. A boy who was ill received his undivided attention. He will be remembered by generations of old boys as a fatherly man, with a gruff voice, and a surface crustiness covering a kindly disposition and an intense interest in their welfare. He was a good school medical officer because there was no point bearing on the health of the community in which he did not concern himself. He took part in many non-medical school activities. He was keen on the theatre and was always to be found at concert times exercising his skill in make-up. He was a keen gardener and a croquet-player of national standard. His home was a focus of social life in the school, and members of the staff were ever welcome to join in the family life."

In 1935 Dr. Friend published *The Schoolboy—a study of his nutrition, physical development, and health* which was based on his own careful and full records for the years 1913–1933. In his opinion the diet did not become satisfactory till 1922, and the deprivations from 1916 onwards were reflected in a fall in both height and weight compared with the pre-war values. After 1922 there was a rise. Despite this, Friend found no obvious difference in the health of the boys except that there was a high incidence of rheumatic infections and more fractures and bone injuries. He attributed these ills chiefly to a shortage of milk, and nobody was a greater supporter of the drink-more-milk policy than he. By 1927 he thought that the school had achieved a diet that was almost ideal: the boys were having an average of over 3000 calories a day, with 92 g. of protein and 108 g. of fat. This diet included fresh fruit, but Dr. Friend deprecated the addition of vitamin A and vitamin D, whether in the form of cod-liver oil or as special preparations, provided the child was getting enough milk and butter.

In the years before the war, and during the war, nutrition was an urgent national problem, and Friend's experience and special knowledge were widely recognised. He was a member of the British Medical Association's committee on nutrition which reported in 1933. When rationing was introduced the authorities based the supplement to the rations which was given to schoolboys on Friend's figures. His examination of the intake of food for large groups had proved that boys from puberty to 17–18 were eating more than at any other time in their lives, but it was (as the late Sir Jack Drummond readily admitted) the only scientific evidence that the enormous appetite of the growing schoolboy was a physiological phenomenon and not greed. After the war, with a Leverhulme grant, Friend continued his work on the physique and growth of adolescents in day and boarding schools. He was a past president of the Medical Officers of Schools Association and on his retirement from Christ's Hospital he was made an honorary member. He died on Oct. 26 at Reading.

VLADIMIR FILATOV

M.D.

Professor Filatov, who died on Oct. 30 at the age of 85, was known to ophthalmic surgeons all over the world for his work on the use of cadaver material in corneal grafting.

A Ukrainian by birth, he spent almost all his life in Odessa. During the late war he worked for some years at Tashkent, where he was in charge of a hospital where his methods of tissue-grafting were applied to plastic surgery. After the war he returned to Odessa to continue his work at the Ukrainian Experimental Research Institute for Eye Diseases and Tissue Therapy, of which he became director. He was also a deputy of the Ukrainian supreme soviet and a member of the Academy of Sciences of the U.S.S.R.

By the early '30s successful transplantation of the cornea from the living eye had been recorded in some 70 cases, including 16 of Filatov's. The growing success of the method led to renewed attempts to find further sources of transparent corneas. Cadaver eyes, from adults as well as from fœtuses, had already been tried in single cases; but only in 1 case, reported by Magitot in 1912, had the transplant been successful. In 1931 when Filatov began to study the problem he based his investigations on another case described by Magitot in which a cornea from a living person was used after 8 days' preservation in the donor's blood at a temperature of −6°C. Filatov soon realised that this form of preservation was also suitable for cadaver eyes, and from 1932 to 1936 he performed 95 operations with material preserved in this way. In 1937 he described this work in our columns. He was himself an expert technician and used with success complex procedures such as the introduction of placental tissue under the conjunctiva. These, after trial, have been largely dropped by surgeons in other countries; but his pioneer work on the use of transplants from the cadaver has revolutionised corneal surgery, and on it his reputation can safely rest.

Dr. A. E. BARNES

R. P., who was one of Barnes's students, writes: "Alfie Barnes's outlook on medicine in the '20s was the outlook of today. He was a medical scientist who always wanted to know the evidence on which an opinion was based, a pioneer in the application of physiology to medicine, and a great clinician; the perfect answer to those who seek to find an antithesis between the art and the science. Two of his sayings we might all remember with advantage.

When I started consulting practice, he said: 'You'll see my failures and I'll see yours. It's no use getting upset about it. People have a right to another opinion if they want it.' And later in life he said to me: 'Always appoint the best possible man, and if he has a finer brain than you have yourself, so much the better.'

A man of great honesty and integrity, without jealousy and with little personal ambition, Barnes succeeded because of the quality of his work and the admiration and trust which he inspired."

Notes and News

A NEW PSYCHIATRIC UNIT

THE new department of psychological medicine, in a rebuilt block of Newcastle General Hospital, was opened by Sir Russell Brain, P.R.C.P., on Nov. 3. It has 54 beds, including 15 on the ground floor to replace the observation unit formerly housed there. On the other floors are many single rooms and wards, none with more than 4 beds, and a day-room for patients. There is provision for insulin and electroconvulsive treatment and occupational therapy, as well as electroencephalography.

The unit is designed to allow closer integration of medicine and psychiatry, of inpatient and outpatient services, and of teaching and research in the Newcastle region.

TRAINING OF HOME NURSES

AT the annual general meeting of the Queen's Institute of District Nurses in London on Oct. 30, Mr. R. H. Turton, the Minister of Health, announced that a committee is to be set up to consider schemes of training of home nurses submitted by all training bodies.

Schemes submitted for approval will have to be of a minimum length of 4 months (or 3 for nurses with certain qualifications and experience) but may be longer. Plans will be made for the training arrangements to be inspected and reported upon to the advisory committee, which will also have to assure themselves, before advising the Minister to approve a scheme, that the arrangements for examinations are satisfactory. All nurses trained under approved schemes will receive a certificate showing that they have been trained under arrangements approved by the Ministry of Health.

Mr. Turton recalled that the Working Party on the training of district nurses which reported last year [1] stated that about half the registered nurses in the home-nursing service had had no special district training. He believed that one effect of the policy he had announced would be that a number of nurses, who at present could not get training because they were employed by local authorities who were neither in membership with the institute nor served by associations affiliated to it, would now be able to attend courses approved by the advisory committee.

Mr. A. H. M. Wedderburn, chairman of the general executive committee, said that the institute had hoped that, as in all other branches of the public-health service, there would be an officially recognised, single, and high national qualification for the district nurse. The new scheme, he feared, meant that the public would now be offered, as an officially blessed alternative, a grade-two certificated district nurse. The institute was convinced that the shorter courses recommended in the report were impossible of achievement, without the omission of one essential aspect or another of the minimum content of training agreed to in the report itself.

PLATYPUS BENNETT

IN choosing the Life and Times of Dr. George Bennett as the title of a postgraduate oration at the University of Sydney, Mr. V. M. Coppleson gave himself a large and lively subject; and what he said on that occasion [2] has now been expanded by the addition of many of Bennett's letters and other information.[3]

George Bennett was born in Plymouth in 1804 and died in Sydney at the age of 89. Medically educated at the Middlesex Hospital and also at the Windmill Street School, he came under the influence of Charles Bell, Herbert Mayo, and Caesar Hawkins. He also made the acquaintance early in life of Richard Owen, with whom he was afterwards to correspond freely. A great naturalist and a competent physician, he wrote much and well. From his Australian home he made many voyages, and in Dillon's Bay on the Island of Erromanga in the New Hebrides he discovered the pearly nautilus.

The year 1832 found him setting forth from Sydney into the interior where two matters particularly attracted his attention: (1) the generation of the kangaroo and the manner by which the young achieved contact with the nipple; and (2) the natural history of the duckbill platypus and whether or not it laid eggs. He did not live long enough to learn the answers to these questions, though he came near to solving both problems himself and tried (unsuccessfully) to bring captured platypuses alive back to Sydney. Soon after his return there he was investigating, at the instance of the New South Wales government, an epizoötic in sheep.

Bennett held an appointment at what came to be known as the Australian Museum, with which he was associated for many years, while carrying on medical practice part-time. In 1841, for financial reasons, he severed his connection with the museum, and for the next twelve years he devoted himself entirely to his professional work, at which he was deservedly successful. But his interest in natural history soon reasserted itself, so that by 1853 his home was "a combination of an art gallery, a miniature museum and a private zoo." His genius was slow to decline and not until his 82nd year did his scientific activities cease.

Mr. Coppleson describes Bennett as "the greatest of the physician-naturalists of Australia . . . He was the Australian counterpart of his great English contemporaries, Owen, Hooker and Gould, and his contributions. . . . have well earned him a place with Joseph Banks and Alexander Macleay amongst the outstanding pioneers of the natural history of Australia."

1. See *Lancet*, 1955, ii, 543.
2. Coppleson, V. M. *Med. J. Aust.* 1955, ii, 273.
3. Coppleson, V. M. *Bull. Post Grad. Comm. Med. Univ., Sydney*, 1955, 11, 207.

University of Sheffield

Through the generosity of the United Steel Companies the university has set up an independent department of statistics. The head of the new department is Mr. G. H. Jowett.

University of Aberdeen

At a graduation ceremony on Oct. 31, the following degrees were conferred:

M.D.—Emma L. Cameron.
Ph.D.—I. M. Richardson, M.D.

College of General Practitioners

The third James Mackenzie lecture, entitled Family Doctors, Their Heritage and Their Future, will be given by Dr. I. D. Grant at 11.30 A.M. on Nov. 17 in the Great Hall, B.M.A. House, Tavistock Square, London, W.C.1. Visitors will be welcome.

The Colombo Plan

1300 people have come to Britain for training during the six years of the Plan's technical coöperation scheme. Among the subjects which those who have arrived recently will study are health education, the work of the operating-theatre nurse, and ophthalmic nursing.

Recent Developments in Virus Research

A joint meeting of the agriculture and microbiology groups will be held on Thursday, Nov. 15, at 6.15 P.M. at the Society of Chemical Industry, 14, Belgrave Square, London, S.W.1, when Mr. F. C. Bawden, F.R.S., and Mr. K. M. Smith, D.SC., F.R.S., will speak on this subject.

Debate on Euthanasia

On Friday, Nov. 16, at 8.15 P.M., in the Middle Temple common room, Brick Court, London, E.C.4, the Hardwicke Society, which is the debating society of the Inns of Court, is to debate the motion "that, subject to proper safeguards, voluntary euthanasia should be lawful." Visitors are invited to attend and to speak.

National Association for Mental Health

The London Parochial Charities is to give £50,000 to this association over the next five years to set up in the London area two experimental hostels, one for girls and another for boys who have been trained at special schools for the educationally subnormal. The hostels will be designed to provide a stable background with trained supervision for young people who might otherwise not be able to stand up to the stresses of working life.

Malta Medical Inquiry

The commission which the government of Malta has appointed to investigate conditions in the islands' medical services left London on Monday last. The chairman is Mr. L. Farrer-Brown, director of the Nuffield Foundation, nominated by the Secretary of State for the Colonies, and the other members are Sir Harold Boldero, nominated by the Royal College of Physicians of London, and Mr. J. B. Oldham, nominated by the Royal College of Surgeons of England. The commission will report to the Maltese government and to the Maltese Medical Officers' Union.

Polar Medal

Among the members of the Australian National Antarctic Research Expedition to Mawson during 1955–56 who have received the Polar Medal is Dr. R. W. Allison.

Royal Society of Health

Dr. J. A. Scott has been elected chairman of this society's congress, meetings, and publications committee, and Dr. Llywelyn Roberts chairman of its health visitors' training and examination committee.

A fellowship has been conferred on Air Marshal Sir James Kilpatrick, director-general of R.A.F. Medical Services.

William Gilliatt Memorial

A fund is being raised in memory of Sir William Gilliatt. It will be held in trust and administered by the Royal College of Obstetricians and Gynæcologists to foster its aims, especially in encouraging research. Contributions already received include £9000 from one donor. Donations may be sent to the college, 58, Queen Anne Street, London, W.1.

Anglo-French Exchange Bursaries

Applications are invited for the bursaries which will be awarded in 1957 to young British doctors under the exchange scheme arranged by the French Embassy in London between the Institut National d'Hygiène in Paris and the Ciba Foundation in London. The grants (60,000 francs a month) will be awarded for two to four months to medical men who wish to obtain clinical experience or carry out research in France. Application forms may be had from Dr. G. E. W. Wolstenholme, director of the Ciba Foundation, 41, Portland Place, London, W.1. The closing date for applications is Feb. 2, 1957.

Wellcome Trust

The Wellcome Trustees have made a grant of 69,000 dollars (about £25,000) to the School of Medicine of the University of Pennsylvania, Philadelphia, to support for five years a Wellcome associate research professorship in the department of anæsthesiology. It is understood that the first appointment to this professorship has been accepted by Dr. Henry L. Price.

CORRIGENDUM: *Experimental Hypothermia.*—In our annotation of Oct. 20 the second paragraph began "Hamsters deeply anæsthetised by a combination of anoxia, hyperkalæmia, and cold . . ." This should have read "anoxia, *hypercapnia*, and cold."

By invitation of the University of Lisbon, Dr. W. S. C. Copeman is to deliver three lectures in the faculty of medicine to mark the inauguration of an institute of rheumatology in association with the new teaching hospital of Santa Maria.

The Proctor award of the Association for Research in Ophthalmology Inc. of the United States has been given this year to Dr. Norman Ashton, director of pathology at the Institute of Ophthalmology, London.

Sir Frederick Armer, who is retiring as deputy secretary of the Ministry of Health on Nov. 14, will continue to be chairman of the Board of Control.

From Nov. 12 the offices of the chairman and scientific secretary of the Wellcome Foundation will be at 52, Queen Anne Street, London, W.1 (WELbeck 5721/2).

The Ministry of Health's leaflet "Maternity Care," which describes the various services to expectant and nursing mothers under the National Health Service, has been revised.

Diary of the Week

NOV. 11 TO 17

Monday, 12th

UNIVERSITY COLLEGE LONDON, Gower Street, W.C.1
5.30 P.M. Prof. Hans Grüneberg, F.R.S.: Genes in Mammalian Development. (Inaugural lecture.)

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Prof. J. Dixon Boyd: Development of the Heart and its Abnormalities.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
4.30 P.M. (Queen Charlotte's Hospital, Goldhawk Road, W.6.) Prof. Hugh McLaren: Pelvic Tumours Complicating Pregnancy.

Tuesday, 13th

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Psychiatry.* Dr. E. A. Bennet, Dr. H. J. Shorvon: Treatment of Morbid Anxiety.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Prof. Dugald Baird: Influence of Social Environment on Child-bearing.

INSTITUTE OF DERMATOLOGY, Lisle Street, London, W.C.2
5.30 P.M. Dr. Henry Haber: Anatomy and Function of Epidermis.

ROYAL ARMY MEDICAL COLLEGE, Millbank, London, S.W.1
5 P.M. Brigadier J. S. K. Boyd, F.R.S.: Bacterial Viruses.

CHELSEA CLINICAL SOCIETY
8.30 P.M. (Rembrandt Hotel, Thurloe Place, S.W.7.) Dr. Macdonald Critchley, Dr. J. L. Blonstein: Medical Aspects of Boxing.

MANCHESTER MEDICAL SOCIETY
8 P.M. (Clinical Science Building, York Place, Manchester, 13.) *Surgery.* Dr. Oliver Jelly, Mr. R. T. Grime: Influence of Wilson Hey on Prostatectomy.

Wednesday, 14th

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Physical Medicine.* Dr. R. L. Newton, Dr. Malcolm Thompson, Dr. R. G. Grainger: Clinical and Radiological Aspects of Sacro-iliac Disease.
8.30 P.M. *Proctology.* Mr. Ronald Raven: Liver Surgery in Relation to Diseases of the Colon and Rectum. (Presidential address.)

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Prof. C. E. Dent: Cystinuria.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, W.1
3.30 P.M. Dr. Neville Goodman: Story of International Health.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. W. Riddell: Ætiology of Ringworm Infections.

INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Dr. N. C. Oswald: Pulmonary Changes in the Reticuloses.

SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane, Queen Victoria Street, E.C.4
5 P.M. Dr. L. H. Murray: Present State of Knowledge with Regard to Vaccination Against Poliomyelitis.
6.15 P.M. Dr. W. H. Kelleher: Prevention, Early Diagnosis, and Management of Poliomyelitis.

EUGENICS SOCIETY
5.30 P.M. (Royal Society, Burlington House, Piccadilly, W.1.) Dr. J. A. H. Lee: Regional Variations in Intellectual Ability in Britain.

UNIVERSITY OF OXFORD
5 P.M. (Radcliffe Infirmary.) Prof. E. P. Sharpey-Schafer: Circulatory Reflexes in Man. (Litchfield lecture.)

MANCHESTER MEDICAL SOCIETY, Medical School, Manchester University
4.30 P.M. *Medicine.* Prof. A. A. Moncrieff: Marasmus.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow
5 P.M. Dr. M. G. P. Stoker: Latent Infections with Viruses and Rickettsiæ. (Lock lecture.)

Thursday, 15th

NATIONAL HOSPITAL FOR NERVOUS DISEASES
8.15 P.M. (1, Wimpole Street, W.1.) Sir Francis Walshe, F.R.S.: Nature and Dimensions of Nosography in Modern Medicine. (Gowers lecture.)

ROYAL SOCIETY OF MEDICINE
4.45 P.M. *Dermatology.* Dr. J. R. K. Preedy: Chronic Liver Disease as a Cause of Pruritus.

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Sir Russell Brock: Relation Between the Embryology and Morphology of the Heart, and Cardiac Surgery.

ROYAL EYE HOSPITAL, St. George's Circus, London, S.E.1
5.15 P.M. Dr. T. H. Whittington: Hypermetrophic Patients, and Presbyopes.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, W.1
8 P.M. Dr. R. C. Tudway, Mr. H. F. Freundlich: Radio-active-phosphorus Test for Intra-ocular Malignancy.

HYPNOTHERAPY GROUP
8 P.M. (1, Wimpole Street, W.1.) Dr. A. G. Davies: Planning a Clinic for Hypnotherapy.

LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
8 P.M. Mr. Raymond Helsby: Renal Calculus Disease.

ST. ANDREW'S UNIVERSITY, Queen's College, Small's Wynd, Dundee
5 P.M. Dr. N. H. Ashton: Oxygen as a Cause of Blindness in Premature Babies.

Friday, 16th

ROYAL SOCIETY OF MEDICINE
5 P.M. *Epidemiology and Preventive Medicine.* Dr. J. Knowelden, Dr. Alice Stewart, Dr. R. A. M. Case: Epidemiology of Cancer.
8.15 P.M. *Radiology.* Dr. M. D. Snelling, Dr. V. M. Dalley, Dr. R. Gibb: Radiation Treatment of Cancer of the Antrum and Ethmoid.

POSTGRADUATE MEDICAL SCHOOL OF LONDON
10 A.M. Mr. D. H. Patey: Importance of Anatomy in the Surgery of the Salivary Glands.
4 P.M. Prof. A. W. Woodruff: Human Filarial Infections.

FACULTY OF RADIOLOGISTS
5 P.M. (Royal College of Surgeons, Lincoln's Inn Fields, W.C.2.) Sir John Charles: Contribution of Radiology in Preventive Medicine. (Crookshank lecture.)

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION
2.15 P.M. (1, Wimpole Street, W.1.) Dr. J. R. Rees: Psychiatry and Public Health. (Maudsley lecture.)

'Saridone' FOR PAIN

TRADE MARK BRAND

PACKINGS

'Saridone' tablets are issued in packings of 10, 50 and 250

Each tablet contains:

Phenyl-dimethyl-isopropyl-pyrazolon ...	0.15 g.
Acetphenetidin	0.25 g.
Caffeine	0.05 g.

ROCHE PRODUCTS LIMITED · 15 MANCHESTER SQUARE · LONDON W1

47

Tomorrow he won't be looking after his barrow. He is going into hospital. There's nothing seriously wrong with him, but the time has come—as it comes to most people—when he must put his trust in doctors and nurses. They, in their turn, put their faith in BRITISH OXYGEN equipment and gases. In thousands of cases, every day, they rely on BRITISH OXYGEN equipment and gases to help them ease pain and save lives.

BOC BRITISH OXYGEN

BRITISH OXYGEN GASES LTD., MEDICAL DIVISION, GREAT WEST ROAD, BRENTFORD, MIDDLESEX.

Makers and suppliers of anaesthetic, analgesic and therapeutic equipment and gases.

PHILIPS
Cardioluxe
ELECTROCARDIOGRAPH

PORTABLE

DIRECT WRITING

SINGLE CHANNEL

INTERFERENCE POSITIVELY ELIMINATED

By simply rotating a control all A.C. mains interference can be positively eliminated.

INSTANTANEOUS RECORD — A heated stylus, in contact with a thermo-sensitive paper, produces *immediately* visible records.

CLEAR DEFINITION — The high writing sensitivity of the paper ensures that the records are produced with great clarity.

EXTREME FIDELITY — Precision electronic design guarantees faithful reproduction. No need to be compared with so called photographic standard.

Write or telephone for Leaflet 'M'

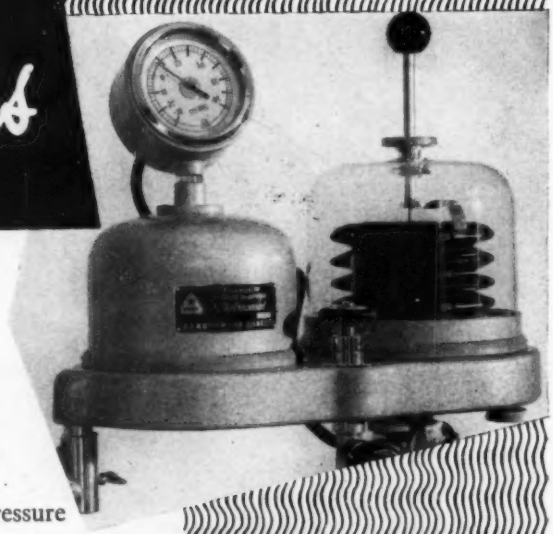
PHILIPS ELECTRICAL LTD.

MEDICAL X-RAY DIVISION

Century House · Shaftesbury Avenue · London WC2 · GERrard 7777

(PXM0121C)

To complete the apparatus



LONDON MEDICAL EXHIBITION
November 12th—16th
New Horticultural Hall, London.

STAND NO. 122

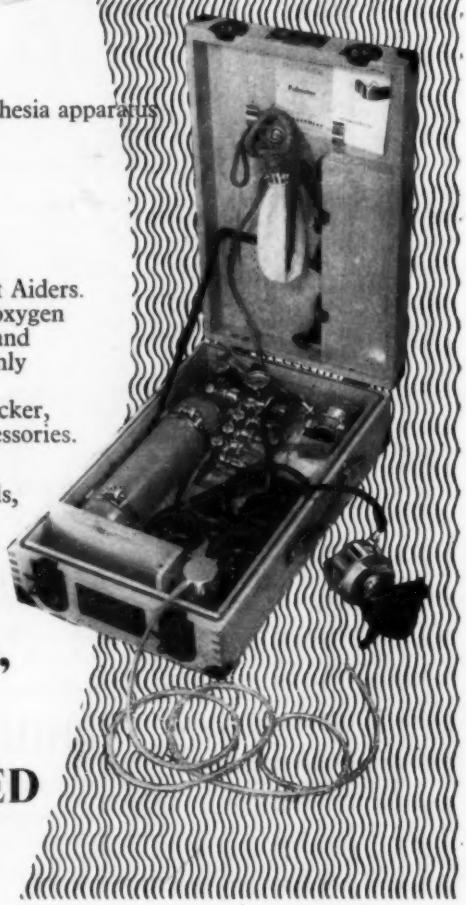
"DRÄGER" Pulmomat
for fully automatically controlled apnœa in anæsthesia.

Safe range of positive and negative pressure
Infinitely variable respiratory rates
Prolonged expiratory phase
Minute volumes from 4-16 litres
Unrestricted use in explosive atmospheres
A modern attachment to every standard anæsthesia apparatus

"DRÄGER" Pulmotor
Portable Oxygen Resuscitation Unit

capable of providing artificial respiration of up to three persons simultaneously.

Designed for use by Doctors and trained First Aiders. A single knob controls the delivery of an air/oxygen mixture automatically at a safe pressure, rate and adequate volume; the negative pressure not only supports but also prolongs expiration. Supplied complete with a powerful venturi sucker, oxygen therapy set and a range of airway accessories.



(The illustration shows the Transit Case Model, as used in Hospitals, Ambulances, Industry, Rescue, and First Aid Squads, by Respiration Units, and General Practitioners, etc.)

Sole importers:

NORMALAIR LIMITED, YEOVIL.

Sales, Demonstrations and Service in the United Kingdom:

GARTHUR (LONDON) LIMITED
MAIDS MORETON HOUSE
BUCKINGHAM.
Telephone: BUCKINGHAM 3155.

The New Chibret Dropper Bottle...

Designed for use in conjunction with the wide range (16 in all) of Chibret Eye Drops. Readily assembled, this new packing is robust and virtually unbreakable. There is no contamination from the dropper or the atmosphere and sterility is assured.

Further details and prices obtainable from Sole Distributors :—

COATES & COOPER LTD. WEST DRAYTON, MIDDLESEX
for
LABORATOIRES H. CHIBRET ET FILS, CLERMONT-FERRAND, FRANCE.

Join in the fun

on a House Party

Ski-ing, skating, tailing, dancing—every minute is fun with a Cooks House Party. Our charming hostess will introduce you to new friends and make all sorts of exciting arrangements for your holiday. The low inclusive charge covers your stay at a comfortable hotel, travel to and from the resort, and the services of our hostess. Just look at these prices!
15 days' holiday Mayrhofen (Austria) from 29 Gns. or 15 days' holiday Kandersteg (Switzerland) for 34 Gns.
Cooks "Winter Sports" programme has scores of winter holidays all over Europe. Call or write for your free copy.

COOKS

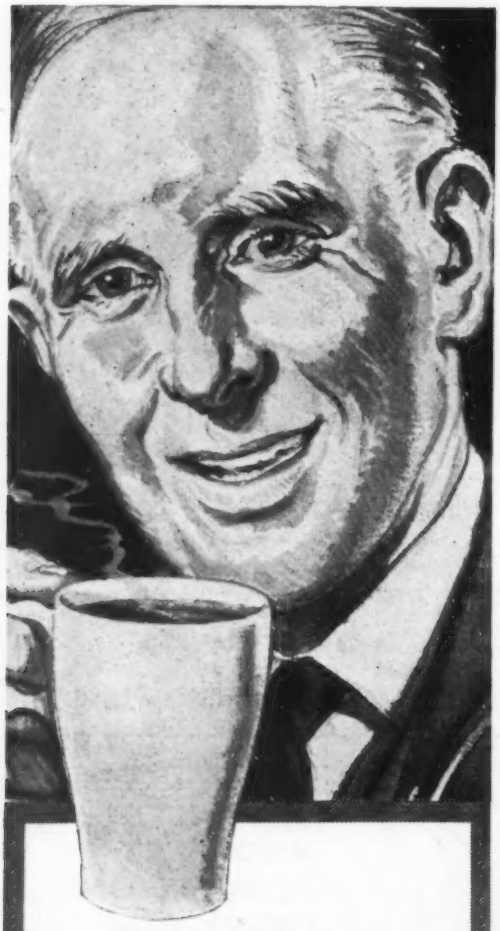
THOS. COOK & SON LTD., Dept. H/2/VT, Berkeley St., London, W.1, or branches. Also from offices of Dean & Dawson Ltd.

THE SAFEST AND BEST PREPARATION OF OPIUM

Nepenthe contains all the constituents of opium and has been prescribed for over 100 years. It has been found by generations of Practitioners to be the best preparation of Opium as it does not cause the unpleasant after-effects usually attributed to opiates. It can be given over a considerable period and the effect remains invariably constant.
Packed in 2-oz., 4-oz., 8-oz. and 16-oz. bottles, and for injection in ½-oz. rubber-capped bottles, sterile, ready for use.

NEPENTHE Regd.

(FERRIS)
FERRIS & CO LTD
BRISTOL
Tel: 21381 Grams: Ferris Bristol



'A splendid nightcap
and it's nourishing too!'

**Bourn-vita is made from
malt, milk, sugar,
cocoa and eggs**

sleep sweeter
BOURN-VITA
made by CADBURYS

YOUR CHILD

In your plans for your child's education and career life assurance can be a real help. Write today for a copy of the New "Career Policy" leaflet to

SCOTTISH WIDOWS' FUND

Head Office: 9 St. Andrew Square, Edinburgh, 2
London Offices: 28 Cornhill, E.C.3 17 Waterloo Place, S.W.1

VALITONE

Soluble BARBITONE gr. 2½ Stabilised
VALERIAN m. 3, per drachm.
The economical and effective
SEDATIVE & HYPNOTIC
4oz. 40oz. & 80oz. bottles
Prescribe on E.C.10

Samples on signed request
ROBERTS & CO.
Pharmaciens
76, New Bond Street, London, W.1.

ST. GEORGE'S NURSING HOME

61, ST. GEORGE'S SQUARE, WESTMINSTER, S.W.1

For the treatment of Medical Emergencies and the Neuroses

Apply Matron: Miss TERESA CLARK, S.R.N. Tel.: TAT 3041/2

CHISWICK HOUSE

PINNER, MIDDLESEX

Telephone: PINNER 334

Private Nursing Home for Mental and Nervous Illness. All modern forms of treatment. Two country houses in adjoining grounds of 5 and 6 acres respectively, 12 miles from London. Trains every 15 minutes from Baker Street to Pinner.

DOUGLAS MACAULAY, M.D. D.P.M.

ST. ANDREW'S HOSPITAL FOR NERVOUS AND MENTAL DISORDERS
NORTHAMPTON

PRESIDENT: THE EARL SPENCER

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

CLIFFDEN, TEIGNMOUTH

For the early treatment of nervous disorders and patients needing rest and care

A well-appointed House with spacious balconies and extensive views of the South Devon Coast. Beautiful garden and own dairy in 35 acres in the same grounds, **ROWDENS**, a comfortable house with lovely views. Private road to the beach

There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 25 acres. 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—TEIGNMOUTH 289 and 537

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All types of treatment carried out. Accommodation for Alcoholics and Addicts available. Special Geriatric Unit now open. Fees from 7 gns. per week upwards according to requirements.

Apply to Dr. J. A. SMALL Telephone: Norwich 20080

THE LANCET

Annual Subscription: £3 3 0 per annum

Special reduced rates to Medical Students and Doctors within 1 year of qualification.

THE MEDICAL PROTECTION SOCIETY LIMITED

Over 60 years experience in medical defence and protection

Complete indemnity granted to members in cases undertaken on their behalf

ANNUAL SUBSCRIPTION: £1 for first three years for newly qualified entrants and £2 thereafter

Full particulars from the Secretary (Dr. Alistair French), **Victory House, Leicester Sq., W.C.2.** Gerrard 4553 and 4814

Vacancies

ACADEMIC AND EDUCATIONAL SECTION *Page* 55

ANÆSTHETICS
North West Met. R.H.B. P.-t. Cons. 56
South London Hosp. for Women & Child., S.W.4. Reg. 59
Barrow & Furness H.M.C. Reg. .. 59
Birmingham R.H.B. Cons. 56
Birmingham R.H.B. Reg. 60
Bournemouth. Royal Victoria. Reg. 60
East Anglian R.H.B. Reg. 62
Hitchin Hosps. Sr. H.O. 62
Leeds R.H.B. P.-t. Cons., Sr. H.M.O. & Locum Sr. H.M.O. 56
Leeds R.H.B. Reg. 63
Leeds United Hosps. Sr. H.O. .. 63
North East Met. R.H.B. Regs. .. 58
Nottingham City. Reg. 64
Oxford R.H.B. Reg. 64
Reading. Royal Berks. Sr. H.O. .. 65
Scotland. South-Eastern R.H.B. Sr. H.M.O. 57
Shrewsbury. Royal Salop Infy & Copthorne. Sr. H.O. 65
South West Met. R.H.B. Cons. .. 57
Tees-side H.M.C. Sr. H.O.'s 66
B.W.I. University College Hosp. Cons. 57
B.W.I. University College Hosp. Reg. 67

BACTERIOLOGY
Scotland. Western R.H.B. Sr. H.M.O. 57

CARDIOLOGY
National Heart, W.1. Reg. 58
National Heart, W.1. Sr. H.O. .. 58
Manchester United Hosps. H.O. .. 63
Newcastle Gen. Sr. H.O. 64
Sheffield. City Gen. Reg. 65

CASUALTY
Hackney, E. 9. Sr. H.O. & H.O. .. 58
Highlands Gen., N.21. Sr. H.O. .. 58
St. Mary's, W.2. Sr. H.O. 59
St. Nicholas, S.E.18. Sr. H.O. .. 59
Blackburn Royal Infy. Jr. H.M.O. or Sr. H.O. 60
Cambridge. Addenbrooke's. Sr. H.O. 61
Ilford. King George. Sr. H.O. .. 62
Liverpool United Hosps. H.O. .. 63
Newcastle Gen. Sr. H.O. 64
Plymouth. South Devon & East Cornwall. Sr. H.O. 64
Reading & Dist. H.M.C. Sr. H.O. .. 65
St. Albans City. Reg. 65
York County. Jr. H.M.O. 67

CHEST AND TUBERCULOSIS
Brompton, S.W.3. Reg. 57
Birmingham R.H.B. Sr. H.M.O. .. 56
Braintree. Black Notley. Sr. H.O. .. 60
Bristol. Ham Green. Jr. H.M.O. .. 61
Cardiff United Hosps. Reg. 61
Chelmsford. Broomfield. Locum Sr. H.M.O. 56
Driffield. Northfield San. Sr. H.O. .. 62
Liverpool. Aintree. Sr. H.O. 63
Skipton. Grassington. Jr. H.M.O. & Sr. H.O. 65
Waltham Abbey. Honey Lane. Jr. H.M.O. 66
Welsh R.H.B. Locum Reg. 66
Wigan & Leigh Group of Hosps. Reg. 66
Woodford Green, Essex. Harts. Sr. H.O. 66

DENTAL SURGERY
Central Middx., N.W.10. Reg. .. 57
South-Western R.H.B. Reg. .. 66

DERMATOLOGY
Birmingham Skin. Sr. H.O. or H.O. 60

EAR, NOSE, AND THROAT
Royal Masonic, W.6. Cons. 56
Royal National T.N.&E., W. H.O. 58

(continued overleaf)

Royal National T.N.&E. Hosp. & Inst. of Laryngology, &c. Sr. Reg. 59
Birmingham & Midland Ear & Throat. H.O. 60
Birmingham R.H.B. Reg. 60
Birmingham United Hosps. Reg. or Sr. H.O. 60
Bristol United Hosps. & South-Western R.H.B. P.-t. Cons. .. 56
Ipswich & East Suffolk. H.O. .. 63
Kingston, Surrey. Sr. H.O. 63
Leeds R.H.B. Sr. Reg. 63
Maidstone. Kent County Ophthalmic & Aural. Sr. H.O. 64
Manchester United Hosps. H.O.'s .. 63
Newcastle R.H.B. Cons. 56
Oxford University & United Hosps. Sr. Reg. 64
Scotland. Western R.H.B. Reg. .. 65
Welsh R.H.B. Reg. 66

GERIATRICS
St. Matthew's, N.1. Sr. H.O. .. 59
Croydon. Queen's. Sr. H.O... .. 61
Leeds R.H.B. Cons. 56

HÆMATOLOGY
Birmingham R.H.B. P.-t. Med. Pract. 60
Manchester United Hosps. H.O. .. 63

INFECTIOUS DISEASES
Leeds R.H.B. Reg. 63
Stoke-on-Trent. Bucknall. Jr. H.M.O. 65

MEDICINE
Elizabeth Garrett Anderson, N.W.1. H.O. 57
Putney, S.W.15. H.O... 58
Royal Free, W.C.1. Sr. H.O... .. 58
Royal Free, W.C.1. Locum Jr. H.M.O. 58
South Western, S.W.9. H.O... .. 59
St. Mary's, W.2. P.-t. Clin. Asst. (Sr. H.M.O.) 56
St. Mary's, W.2. Sr. Reg. 59
Wanstead, E.11. H.O. 59
Westminster, S.W.1. Reg. 59
Whipps Cross, E.11. Pre-reg. H.O.'s 59
Aberdeen Gen. Hosps. B.O.M. Jr. H.M.O. 59
Bedford Gen. Pre-reg. H.O.'s .. 59
Bideford & Dist. H.O. 60
Birmingham R.H.B. Reg. 60
Birmingham United Hosps. Reg. .. 60
Bournemouth. Christchurch. Pre-reg. H.O. 60
Brighton Gen. H.O. 61
Bury St. Edmunds. West Suffolk Gen. H.O.'s 61
Chichester Group H.M.C. Jr. H.M.O. 61
Derby. Derbyshire Royal Infy. Reg. 62
Driffield. East Riding Gen. Sr. H.O. 62
Epping. St. Margaret's. Pre-reg. H.O. 62
Hastings. Royal East Sussex. H.O. 62
Hemel Hempstead. West Herts. Pre-reg. H.O. 62
Hertford County. H.O. 62
Manchester United Hosps. H.O.'s .. 63
Mitcham, Surrey. Wilson. H.O. .. 63
North East Met. R.H.B. Reg. .. 58
Northwood, Middx. Mount Vernon. H.O. 64
Poole Gen. Pre-reg. H.O. 64
Reading Area Dept. of Medicine. H.O.'s 65
Salisbury Gen. H.O. 65
Southend Gen. Pre-reg. H.O. .. 66
Stoke-on-Trent. North Staffs Royal Infy. Pre-reg. H.O. 66
Taplow. Canadian Red Cross Mem. Reg. 66
Welsh Regional Bureau. Pre-reg. H.O.'s 67
Welsh R.H.B. Reg. 66
Wolverhampton Group. Pre-reg. H.O. 66

NEUROSURGERY
London, E.1. Research Asst. (Sr. Reg.) 58
Manchester United Hosps. H.O.'s .. 63

OBSTETRICS AND GYNÆCOLOGY
Elizabeth Garrett Anderson, N.W.1. Reg. & H.O... 57
Hackney, E.9. Sr. H.O. 58
Hosp. of St. John & St. Elizabeth, N.W.8. H.O. 58
Mile End, E.1. Sr. H.O. & H.O.'s .. 58
North East Met. R.H.B. Regs. .. 58
Barnsley. St. Helen. Reg. 59
Birmingham. Marston Green Maternity. H.O. 60
Bristol United Hosps. & South-Western R.H.B. Reg. 61
Bury St. Edmunds. West Suffolk Gen. H.O. 61
Cambridge Maternity. H.O... .. 61
Cardiff. Caerphilly Dist. Miners. H.O. 61
Crewe & Dist. Mem. & Barony, Nantwich. Sr. H.O... 61
Huddersfield H.M.C. Pre-reg. H.O. .. 62
Manchester United Hosps. H.O. .. 64
Salisbury Gen. H.O. 65
Swansea. Mount Pleasant. Sr. H.O. 66
Welsh Regional Bureau. Pre-reg. H.O.'s 67

OPHTHALMOLOGY
Birmingham R.H.B. Sr. Regs. .. 60
Manchester United Hosps. P.-t. Sr. H.M.O. 56
Manchester United Hosps. Reg. .. 63
Manchester United Hosps. H.O. .. 63

ORTHOPÆDICS
Royal National Orthopædic, W.1. Reg. 59
Ashford, Middx. H.O... 59
Birmingham R.H.B. Reg. 60
Bournemouth. Royal Victoria. Sr. H.O. 60
Bury St. Edmunds. West Suffolk Gen. H.O. or Sr. H.O. 61
Carshalton. Queen Mary's Hosp. for Child. Reg. 61
Chertsey. St. Peter's. Sr. H.O. or Pre-reg. H.O. 61
Derby. Derbyshire Royal Infy. Sr. H.O. 62
Epping. St. Margaret's. Sr. H.O. .. 62
Leeds R.H.B. Locum Sr. H.M.O. .. 56
Leeds R.H.B. Reg. 63
Manchester United Hosps. H.O.'s .. 63
Newmarket Gen. Sr. H.O. 64
Nottingham Gen. Sr. H.O.'s.. .. 64
Orpington, Kent. H.O. 64
Reading. Battle Hosp. H.O... .. 65
Welsh Regional Bureau. Pre-reg. H.O.'s 67

PÆDIATRICS
Whittington, N.19. H.O. 59
Birmingham United Hosps. Sr. H.O. 60
Bury St. Edmunds. West Suffolk Gen. H.O.'s.. 61
Coventry. Gulson. Pre-reg. H.O. .. 62
Isleworth. West Middlesex. Reg. .. 63
Scotland. Eastern R.H.B. Sr. Reg. 65
University of Liverpool. Chair of Child Health.. 55
Welsh Regional Bureau. Pre-reg. H.O.'s 67

PATHOLOGY
St. Mary's, W.2. Res. Clin. Path. .. 59
Edgware Gen. Reg. 62
Macclesfield. Sr. H.O. 64
Reading. Royal Berks. H.O... .. 65
Rochdale & Dist. H.M.C. Sr. H.O. .. 65
Scotland. Western R.H.B. Reg. .. 65
Sheffield United Hosps. Sr. H.O. .. 65
Taplow. Canadian Red Cross Mem. Sr. H.O. 66
West Dorset Group H.M.C. Reg. .. 66
New Zealand. Cook Hosp. Board. Gisborne. Sr. or Jr. Specialist .. 57
St. John's, Newfoundland, Canada. Gen. Reg. 67
Western Australia. Royal Perth. Pathologist 57

PHYSICAL MEDICINE
King's College Hosp., S.E.5, & South East Met. R.H.B. Sr. Reg... .. 58
Middlesex, W.1. Sr. H.O. 58

PLASTIC SURGERY
Newcastle United Hosps. & R.H.B. Cons. 57

PSYCHIATRY
Bedford, Bromham. Reg. 59
Birmingham R.H.B. Sr. H.M.O. .. 56
Bristol United Hosps. & South-Western R.H.B. Sr. Reg... .. 60
Lancaster Moor. Locum Sr. H.M.O... 56
Manchester. Springfield. Reg. .. 63
North East Met. R.H.B. Reg. .. 58
North West Met. R.H.B. Sr. H.M.O. 56
Oxford R.H.B. Reg. 64
Preston. Whittingham. Jr. H.M.O. 64
Retford, Notts. Rampton. Sr. Reg. 65
South Somerset Clinical Area. Sr. Reg. 66
South-Western R.H.B. Sr. H.M.O. 57
St. Albans. Harperbury. Jr. H.M.O. 65
St. Albans. Napsbury Mental. Jr. H.M.O. 65
Wakefield. Stanley Royd. Jr. H.M.O. 66
Northern Ireland Hosps. Auth. Sr. H.M.O. 57

RADIOLOGY
Guy's, S.E.1. Reg. 58
Royal Northern, N. 7. Reg... .. 59
South West Met. R.H.B. Sr. H.M.O. 56
Bristol United Hosps. & South-Western R.H.B. Sr. Reg... .. 61
Carshalton. St. Helier. Sr. Reg. .. 61
Liverpool United Hosps. Reg. .. 63
Manchester R.H.B. & United Hosps. Sr. H.O.'s 63
Newcastle R.H.B. Cons. 57
South West Met. R.H.B. P.-t. Cons. 57
New Zealand. Marlborough Hosp. Board. Jr. or Sr. Specialist.. .. 57

RADIOTHERAPY
Royal Marsden, S.W.3. Regs. .. 58
Oxford United Hosps. Reg. 64
Scotland. South-Eastern R.H.B. Reg. 65
Welsh R.H.B./Cardiff United Hosps. Reg. 66

RESEARCH
Cancer Institute Board, Melbourne. Asst. Med. Director 56

SURGERY
Connaught, E.17. H.O. 57
Elizabeth Garrett Anderson, N.W.1. H.O. 58
Nelson, S.W.20. H.O. 58
North East Met. R.H.B. Regs. .. 58
Queen Mary's Hosp. for the East End, E.15. Pre-reg. H.O... 58
Royal Free Hosp. Group. Reg. .. 58
Royal Northern, N.7. H.O.'s .. 59
Whipps Cross, E.11. Pre-reg. H.O.'s 59
Willesden Gen., N.W.10. H.O. .. 59
Barnstaple. North Devon Infy. Sr. H.O. 59
Bedford Gen. H.O.'s 59/60
Bexhill, Sussex. Pre-reg. H.O. .. 60
Birmingham R.H.B. Reg. 60
Birmingham United Hosps. P.-t. Cons. 56
Birmingham United Hosps. & R.H.B. P.-t. Cons. 56
Bishop Auckland. Gen. H.O. .. 60
Bournemouth. Royal Victoria. H.O. 60
Brighton Gen. H.O. 61
Bristol Clinical Area. Sr. Reg. .. 61
Bury St. Edmunds. West Suffolk Gen. H.O.'s.. 61
Cardiff, Caerphilly Dist. Miners. Sr. H.O. 61
Chelmsford & Essex. H.O. 61
Croydon Gen. Pre-reg. H.O. .. 61
Croydon. Mayday. Pre-reg. H.O. .. 61
Dewsbury. Staincliffe Gen. Sr. H.O. 62
Doncaster Royal Infy. Sr. H.O. .. 62
Dorchester. Dorset County. Reg. .. 62
Douglas. Noble's Isle of Man. Sr. H.O. 62
Edinburgh. Princess Margaret Rose. H.O. 62
Enfield. Chase Farm. H.O. 62
Epping. St. Margaret's. H.O. .. 62
Epsom Dist. Pre-reg. H.O. 62
Exeter. Royal Devon & Exeter. H.O. 62
Hastings. Royal East Sussex. H.O. 62
Hitchin. North Herts. H.O... .. 62
Hull. Kingston Gen. H.O. 62
Ilford. King George. Pre-reg. H.O.'s 63
Ipswich & East Suffolk. H.O. .. 63
Ipswich & East Suffolk. Pre-reg. H.O. 63
Leeds. Chapel Allerton. Reg. .. 63
Leeds R.H.B. Reg. 63
Manchester United Hosps. H.O.'s .. 63
Manchester. West Manchester H.M.C. Sr. H.O. 63
Northwood, Middx. Mount Vernon. H.O. 64
Nottingham Gen. H.O. 64
Oxford R.H.B. Locum Reg. .. 64
Plymouth South Devon & East Cornwall. Pre-reg. H.O.'s .. 64
Poole Gen. Pre-reg. H.O.'s 64
Portsmouth Group H.M.C. Pre-reg. H.O. 64
Port Talbot Gen. H.O. 64
Reading. Royal Berks. H.O. 64
Rochford, Essex. Gen. Pre-reg. H.O. 65
Salisbury Gen. H.O. 65
Scotland. Eastern R.H.B. Reg. .. 65
Scotland. Western R.H.B. Reg. .. 65
Southend. Gen. H.O.'s 66
Southport Gen. Infy. H.O.'s .. 66
Stockport. Stepping Hill. Sr. H.O... 66
Watford Peace Mem. & Shrodells Hosps. Reg... 66
Welsh Regional Bureau. Pre-reg. H.O.'s 67
Wigan. Billinge. Sr. H.O. 66
Worcester Royal Infy. Sr. H.O. .. 66

THORACIC SURGERY
Birmingham. Yardley Green. Sr. H.O. 60
Liverpool. Aintree. Sr. H.O... .. 63

GENERAL
Canada. Kingston Gen. Hosp., Ont. Interneships 67
U.S.A. Near Boston, Mass. Rotating Internship 67
U.S.A. Toledo Hosp., Ohio. Internes 67

PUBLIC APPOINTMENTS 67

GENERAL PRACTICE 70

MISCELLANEOUS 70

Academic and Educational

ROYAL COLLEGE OF SURGEONS OF ENGLAND

ANNUAL MEETING OF FELLOWS AND MEMBERS

Notice is hereby given that the Annual Meeting of Fellows and Members will be held in the College, on WEDNESDAY, 12TH DECEMBER, 1956, at 4 P.M.

PRELIMINARY AGENDA

(1) Presentation of the Annual Report of the Council.

Fellows and Members and other Diplomates of the College can obtain copies of the Report on application to the Secretary, and can, if they so desire, have their names placed on the List of those to whom the Report is sent annually.

(2) Report on the financial position of the College.

(3) Report on the application for a supplemental Charter and the new powers sought thereby.

(4) Report on the postgraduate educational activities of the College.

(5) Report on progress of the rebuilding of the College.

Fellows and Members are cordially invited to take part in the discussions.

(6) Motions by Fellows or Members.

Motions to be brought forward at the Meeting must be signed by a mover, or by the mover and other Fellows and Members, and must be received by the Secretary not later than 1st December.

A copy of the Agenda will be issued on or after 8th December to any Fellow or Member who may apply for one.

EVENTS ON 12TH DECEMBER, 1956

10 A.M. –1 P.M. "View Day" in the College.
(*a*) Scientific demonstrations to be arranged in each of the College Departments.
(*b*) Display of Scientific pictures in the Exhibition Hall.
1 P.M. Buffet Lunch.
2.30 P.M. Admission of Prof. I. S. Ravdin to the Honorary Fellowship.
Moynihan Lecture: Prof. I. S. Ravdin.
4–5 P.M. Annual Meeting of Fellows and Members.
5 P.M. Tea.
7 for 7.30 P.M. Monthly subscription dinner.

KENNEDY CASSELS, Secretary.

Royal College of Surgeons, Lincoln's Inn-fields, London, W.C.2, November, 1956.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

COURSE IN CLINICAL SURGERY
FEBRUARY–APRIL, 1957

A 2 month full-time course in clinical surgery will be held at the Westminster Hospital and a non-teaching hospital (to be announced later) from 18TH FEBRUARY to 12TH APRIL, 1957.

The number of candidates accepted for the course will be limited to 15. The last date for the receipt of applications is Friday, 30th November, 1956.

Fees: £26 5s. plus £5 5s. for the course of 24 surgery lectures given at the College.

Further information of, and application forms for, this course may be obtained from Mr. W. F. DAVIS, Deputy Secretary, Royal College of Surgeons, Lincoln's Inn-fields, W.C.2 (Tel. HOLborn 3474).

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Sir MAURICE BOWRA, F.B.A., M.A., will deliver the LLOYD ROBERTS LECTURE on TUESDAY, 20TH NOVEMBER, at 5 P.M. at the College, Pall Mall East, London, S.W.1.

Subject: "Greek Science; its Greatness and its Failure."

Any member of the Medical Profession admitted on presentation of card.

By order of the President.
HAROLD BOLDERO, Registrar.

ROYAL COLLEGE OF SURGEONS IN IRELAND

PRIMARY FELLOWSHIP COURSE IN PHYSIOLOGY/PATHOLOGY

The next course in Physiology and Pathology for the Primary Fellowship Examination will commence on the last MONDAY in FEBRUARY and continue up to the June examination.

Application for places in the class should be made to the Registrar, 123, St. Stephen's-green, Dublin.

UNIVERSITY OF LONDON

A COURSE OF 2 LECTURES on "The Contributions of Pharmacy and Chemical Engineering to World Needs" will be given by Brigadier-General Sir HAROLD HARTLEY at 5.30 P.M. on 14TH and 15TH NOVEMBER at the School of Pharmacy, 17, Bloomsbury-square, W.C.1.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

UNIVERSITY OF LONDON

GRANTS FOR RESEARCH

Applications are invited from members* of the University and teachers in Schools of the University for grants from the Central Research Fund to assist specific projects of research and for the provision of special materials and apparatus. Grants are not made for normal maintenance.

Applications must next be received not later than 30th November, 1956. Forms of application and further particulars may be obtained from the Secretary to the Central Research Funds Committee, University of London, Senate House, London, W.C.1.

* Members of the University are defined by Statute as the Chancellor, the members for the time being of the Court and of the Senate respectively, the Professors and Readers and other Teachers of the University during their tenure of office, the graduates and the students.

THE UNIVERSITY OF MANCHESTER
FACULTY OF MEDICINE

DIPLOMA IN DIAGNOSTIC RADIOLOGY
(R.C.P. AND S. ENG.)

A course of instruction for the above Diploma will commence early in MARCH, 1957, and extend over a period of 2 years. The course is full-time, non-resident: inclusive fee £52.

Applications are invited from registered medical practitioners who fulfil the requirements as to previous medical experience laid down by the Examining Board of England (D.M.R.D.) regulations obtainable from the London Conjoint Board, 8–11, Queen-square, London, W.C.1.

Application should be made to the Dean of Postgraduate Medical Studies, the University, Manchester, 13, not later than 7th December, 1956.

THE UNIVERSITY OF LEEDS

CHAIR OF CHEMICAL PATHOLOGY

The Council will shortly proceed to an appointment to the Chair of Chemical Pathology, vacant on the retirement of Prof. F. S. Fowweather, at a salary within the range £2100–£2850 a year (or exceptionally up to £3100 a year). The appointment will take effect from a date to be arranged with the successful candidate.

Applications (20 copies), stating date of birth, qualifications and experience, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 31st December, 1956; candidates overseas may apply in the first instance by cable, naming 3 referees in the United Kingdom.

THE UNIVERSITY OF LIVERPOOL

LOUIS COHEN CHAIR OF DENTAL SURGERY

The Council of the University of Liverpool invites applications for the Louis Cohen Chair of Dental Surgery. Salary within the approved range for clinical dental professorial salaries.

Further particulars may be obtained from the undersigned, by whom 14 copies of applications (1 in the case of overseas candidates) should be received not later than 5th January, 1957.

STANLEY DUMBELL, Registrar.

THE UNIVERSITY OF LIVERPOOL

CHAIR OF CHILD HEALTH

The Council of the University of Liverpool invites applications for the full-time Chair of Child Health. Salary within the approved range for clinical professorial salaries. Clinical facilities will be provided by the Board of Governors of the United Liverpool Hospitals and the Liverpool Regional Hospital Board.

Further particulars may be obtained from the undersigned, by whom 15 copies of applications (1 in the case of overseas candidates) should be received not later than 12th January, 1957.

STANLEY DUMBELL, Registrar.

INSTITUTE OF BASIC MEDICAL SCIENCES
ROYAL COLLEGE OF SURGEONS OF ENGLAND
BRITISH POSTGRADUATE MEDICAL FEDERATION
(UNIVERSITY OF LONDON)

LECTURES IN ANATOMY, PHYSIOLOGY AND PATHOLOGY
FEBRUARY–MAY, 1957

A course of Lectures in the above subjects will be held at the Institute from 11TH FEBRUARY to 17TH MAY, 1957. Applications for this Course will be limited. Fee £36 15s.

Closing date for applications Friday, 4th January, 1957.

Further information may be obtained from Mr. W. F. DAVIS, Secretary, Institute of Basic Medical Sciences, Royal College of Surgeons, Lincoln's Inn-fields, W.C.2 (Tel. HOLborn 3474).

ST. MARY'S HOSPITAL MEDICAL SCHOOL

NICHOLAS FELLOWSHIP

Research Fellow required for an initial period of 3 years to investigate certain pharmacological or biochemical aspects of cardio-vascular disease. Medical qualification not essential. Salary £1000 p.a.

Applications, together with the names of 2 referees, to the Secretary, St. Mary's Hospital Medical School, Paddington, W.2, by 30th November, 1956.

GLASGOW ROYAL INFIRMARY

MCGHIE CANCER RESEARCH SCHOLARSHIP

Applications are invited from suitably qualified persons (not necessarily medical graduates) for the above scholarship which is now vacant. This appointment is a whole-time research appointment, and remuneration is at the rate of £800–£1000 p.a. according to age and experience.

Applications, with names of not more than 3 referees, should be forwarded to the Medical Superintendent, Royal Infirmary, 84, Castle-street, Glasgow, C.4, from whom further particulars may be obtained. In their applications, candidates must indicate the nature and scope of their proposed research.

NAPT

SYMPOSIUM ON CHRONIC BRONCHITIS FOR CHEST PHYSICIANS, WEDNESDAY, 12TH DECEMBER, 1956, 3.30–6.30 P.M. in B.M.A. House, W.C.1. Chairman: J. L. LIVINGSTONE, M.D., F.R.C.P. Introduction, NEVILLE C. OSWALD, T.D., F.R.C.P., and 9 other papers.

Admission by ticket.

Details from NAPT, Tavistock House North, London, W.C.1.

L.M.S.S.A.

FINAL EXAMINATION: SURGERY, 3rd December, 1956, 14th January, 11th February, 1957. MEDICINE, PATHOLOGY, 10th December, 1956, 21st January, 18th February, 1957. MIDWIFERY, 11th December, 1956, 22nd January, 19th February, 1957. MASTERY OF MIDWIFERY, May and November. DIPLOMA IN INDUSTRIAL HEALTH, July and December.

For regulations apply REGISTRAR, Apothecaries Hall, Black Friars-lane, London, E.C.4.

CANCER INSTITUTE BOARD, Melbourne, Victoria, AUSTRALIA. Applications are invited for the position of ASSISTANT MEDICAL DIRECTOR of the Institute. The appointee is required to possess a senior Degree or Diploma in Medicine or Surgery, and/or equivalent specialist qualification in radiotherapy.

In addition to clinical duties, the Assistant Medical Director is required to deputise for the Medical Director during his absence and to perform such administrative duties as are required by the Medical Director. The Assistant Medical Director is an ex officio member of the Board.

The full-time salary is at the rate of £A4016 7s. p.a., including £A356 4s. current cost-of-living adjustment.

Other conditions of this appointment cover :

(*a*) Rights to limited private practice under certain conditions.
(*b*) Superannuation benefits.
(*c*) Long Service Leave in addition to recreation and sick leave entitlements.

The position is non-resident. An appointee from overseas will be granted first-class fares for himself and family together with an allowance of £(sterling)200 for the transport of furniture and personal effects, and when, for exceptional reason, the cost of transport of goods exceeds the usual allowance, the Board will consider a request for a supplementary allowance.

The Cancer Institute Board (Peter MacCallum Clinic) provides treatment for and conducts research into cancer and allied diseases. The Institute uses modern equipment for radiotherapy and has excellent facilities for research in the clinical sphere, medical physics, and pathology. The outpatient attendances are 18,500 annually and inpatient treatment is conducted.

Further information about the Institute and terms of appointment may be obtained from the Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1, or the Agent-General for Victoria, Australia House.

Applications, accompanied by copies of testimonials and names of 4 referees, to reach the undersigned before 31st December, 1956. A. F. CAMERON, Manager and Secretary.

Hospital Services : Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) ASSISTANT PSYCHIATRIST (whole-time), Senior Hospital Medical Officer grade, Leavesden Hospital, Abbots Langley, Herts (2378 Beds—mental deficiency).

Applications before 10th December, 1956.

(2) CONSULTANT ANÆSTHETIST (2 half-days a week—Wednesday mornings and afternoons), Highlands General Hospital, Winchmore Hill, N.21 (732 Beds).

Applications before 17th December, 1956.

Hospitals may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland-place, W.1.

ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. Applications are invited from Fellows of one of the Royal Colleges of Surgeons for the appointment of CONSULTANT E.N.T. SURGEON at the above Hospital as from 1st April, 1957. Candidates must be engaged in consulting practice and well established in their profession.

Applications, giving detailed information and the names and addresses of 3 referees, should reach the undersigned (from whom further information may be obtained) on or before 30th November, 1956.

R. E. LAWSON, Secretary and House Governor.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time ASSISTANT RADIOLOGIST (Senior Hospital Medical Officer grade) in the Lambeth Group, for duty in the X-ray Diagnostic Departments at Lambeth Hospital, S.E.11, and South Western Hospital, S.W.9, under the general guidance of the Consultant. Candidates should have D.M.R.

Applications by letter (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11a, Portland-place, W.1, by 8th December, 1956. Applicants may visit hospitals by local arrangement.

ST. MARY'S HOSPITAL, Paddington, W.2. Applications are invited from suitably qualified practitioners for the post of CLINICAL ASSISTANT in the Allergy Clinics (Wright-Fleming Institute of Microbiology) for 2 notional half-days per week ; graded Senior Hospital Medical Officer. The appointment will be as from a date to be arranged.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, by 21st November, 1956.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(*a*) Whole-time ASSISTANT PSYCHIATRIST (salary scale £1575–£2025 p.a.). Duties at Highcroft Hall Hospital (1225 Beds). Private house available. Experience specialty required.

(*b*) Whole-time ASSISTANT CHEST PHYSICIAN, Dudley and Stourbridge Group (£1575–£2025 p.a.). Duties as Deputy Medical Superintendent of Group Sanatoria (total 280 Beds including 60 children) (9/11ths) and also at Chest Clinic, Dudley (2/11ths). House available at Prestwood.

Applications (15 copies), stating name, age, nationality, present and previous appointments and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, by 26th November.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Whole-time CONSULTANT in Anæsthetics, Birmingham (Selly Oak) Group, duties mainly at Selly Oak Hospital. Experience specialty and D.A. (Parts I and II) or F.F.A. R.C.S. required.

Applications (15 copies), stating name, age, nationality, present and previous appointments and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, by 26th November, 1956.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the appointment of a Part-time CONSULTANT SURGEON for 2 notional half-days per week at the Children's Hospital. The successful candidate may be required to undertake postgraduate studies in other approved centres either in this country or abroad, for which purpose a Fellowship will be available which will include travelling expenses and subsistence allowance and a basic salary.

Applications, naming 3 referees, must be submitted on a form to be obtained from the Secretary to the Board of Governors, Queen Elizabeth Hospital, Birmingham, 15, and returned by 8th December, 1956.

BIRMINGHAM. UNITED BIRMINGHAM HOSPITALS AND THE BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications are invited for the joint appointment of Part-time CONSULTANT SURGEON. The appointment will be held on the basis of 9 notional half-days weekly; 5 notional half-days in the United Hospitals and 4 notional half-days in the Dudley and Stourbridge Group (duties mainly at the Corbett Hospital, Stourbridge). The successful candidate may be required to undertake postgraduate studies in other approved centres either in this country or abroad, for which purpose a Fellowship will be available which will include travelling expenses, subsistence allowance and a basic salary.

Applications, naming 3 referees, must be submitted on a form to be obtained from the Secretary to the Board of Governors, Queen Elizabeth Hospital, Birmingham, 15, and returned by 8th December, 1956.

BRISTOL. UNITED BRISTOL HOSPITALS. SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the joint appointment of a CONSULTANT E.N.T. SURGEON to the United Bristol Hospitals and the South-Western Regional Hospital Board. The appointment will be on a maximum part-time basis, and the candidate appointed will work in the Teaching Hospital, in Southmead Hospital, Bristol, and in other Hospitals in the Bristol Clinical Area as determined from time to time. The programme of duties will be subject to review in the near future.

Applications, stating age, qualifications and experience, and giving the names of 2 referees, should reach the Secretary to the Board of Governors at the Bristol Royal Infirmary, Bristol, 2 (from whom further particulars may be obtained), not later than Monday, 3rd December, 1956.

CHELMSFORD, ESSEX. BROOMFIELD HOSPITAL. Required experienced Locum Tenens SENIOR HOSPITAL MEDICAL OFFICER for long period, full residence or only when on duty. Unit has 330 Beds for the treatment of pulmonary tuberculosis in adults. Tuberculous and non-tuberculous thoracic surgery, chest clinic, and mass radiography.

Apply Physician-Superintendent.

LANCASTER MOOR HOSPITAL, Lancaster. (Regional MENTAL HOSPITAL.) Locum ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer) required immediately for several weeks. Previous psychiatric experience essential. Salary according to national scale and at present 31½ guineas per week, less residential charges. Accommodation for single person only.

Apply Medical Superintendent.

LEEDS REGIONAL HOSPITAL BOARD.

(*a*) Whole-time Locum ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer scale).

(*b*) Whole-time Locum ASSISTANT ORTHOPÆDIC SURGEON (Senior Hospital Medical Officer scale), Dewsbury and Leeds.

Applications, stating age, qualifications, and details of appointments held showing dates, together with the names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, not later than 23rd November, 1956.

LEEDS REGIONAL HOSPITAL BOARD.

Whole-time or maximum Part-time CONSULTANT GERIATRICIAN, Huddersfield Group of hospitals (482 Beds). The successful applicant will be in clinical charge of the geriatric service in the area and will be required to reside in Huddersfield.

Part-time CONSULTANT ANÆSTHETIST (8 sessions per week) at hospitals in the Huddersfield area. Person appointed to reside in Huddersfield.

Whole-time ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer scale) for duties at hospitals in the Scarborough, Bridlington, Malton and Whitby Group. Person appointed to reside in or near Scarborough.

Applications (12 copies), stating age, qualifications, and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 24th November, 1956.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of Part-time (9 sessions) SENIOR HOSPITAL MEDICAL OFFICER (non-resident). Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications, giving details of past experience and qualifications, together with the names of 3 referees, to be addressed to the undersigned as early as possible. (Special application forms can be obtained on request.)

F. J. CABLE, Secretary, United Manchester Hospitals.
The Lodge, Oxford-road, Manchester, 13.

NEWCASTLE REGIONAL HOSPITAL BOARD. CONSULTANT E.N.T. SURGEON (whole-time, or maximum part-time for a minimum of 9 notional half-days per week) at Durham and North West Durham Groups of hospitals. Main hospitals Durham—Dryburn, 300 Beds ; County, 116 Beds ; North West Durham—Shotley Bridge General, 530 Beds ; Maiden Law, 108 Beds. Appointee will be 1 of a team of 2 to work in both areas and to reside 1 in each area.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. CONSULTANT RADIOLOGIST (whole-time, or maximum part-time for 9 notional half-days per week) for Sunderland Area Group of hospitals. Main hospital Sunderland General, 508 Beds, including special departments and large Geriatric Unit.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS AND NEWCASTLE REGIONAL HOSPITAL BOARD. Applications are invited for the post of ASSISTANT PLASTIC SURGEON at the Royal Victoria Infirmary under the Board of Governors, and Plastic Surgeon with the Regional Hospital Board. The appointment will be of Consultant status and will be full-time or maximum part-time. The major number of sessions will be with the Teaching Hospital and the remainder (2–4) in hospitals under the Regional Hospital Board.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for a whole-time appointment of ANÆSTHETIST (Senior Hospital Medical Officer grade) for duty in the hospitals in the Eastern half of the County of Fife, based on Kirkcaldy General Hospital.

Applications, giving particulars of age, qualifications, and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, 11, Drumsheugh-gardens, Edinburgh, 3, by 1st December, 1956.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT BACTERIOLOGIST based at the Southern General Hospital, Glasgow. Salary (at age 32 and over) £1575–£50–£2025. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, not later than 30 days after the publication of this advertisement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time CONSULTANT RADIOLOGIST (9 half-days per week) for duties in the Kingston (Surrey) Group of hospitals. Candidates must have D.M.R. and wide experience in radiology.

Applications by letter (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 8th December, 1956. Applicants may visit hospitals by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires CONSULTANT ANÆSTHETIST (whole-time or maximum part-time) for the Croydon Group of hospitals. Candidates must have wide experience in anæsthetics and be prepared to live in the area or within reasonable distance.

Applications by letter (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1) South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 8th December, 1956. Applicants may visit hospitals by local arrangement.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of DEPUTY MEDICAL SUPERINTENDENT at Hortham Hospital, near Bristol. This Hospital with its ancillary units at Bristol, Painswick, Cheltenham and Bath contains about 970 Beds. The appointment will be on a whole-time basis in the Senior Hospital Medical Officer grade. Applicants should possess the D.P.M., and previous experience in mental deficiency is essential. The successful candidate will have charge of beds at Hortham Hospital, and will be required to work under the general direction of the Medical Superintendent. Accommodation is available if required.

Applications (12 copies), stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 24th November, 1956.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for the whole-time post of PSYCHIATRIST, in the grade of Senior Hospital Medical Officer, at Londonderry and Gransha Hospital, Londonderry. The terms, conditions of service, and remuneration will be in accordance with the Authority's application of the Spens report to Northern Ireland.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and to be returned not later than 24th November, 1956.

B.W.I. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES. Applications are invited for the position of CONSULTANT ANÆSTHETIST to commence duties as early as possible. Candidates must have had wide experience in anæsthetics and be in possession of the F.F.A.R.C.S. The salary will be £2400 p.a. The appointment will be for 1 year in the first instance renewable. Passages to Jamaica will be provided and also return passages to the country of recruitment, if required, at the satisfactory completion of the contract. Resident accommodation is not provided.

Applications, stating age, nationality, qualifications, details of present appointment and previous experience, together with the names and addresses of 3 referees, should be sent immediately to the Hospital Manager and Secretary, University College Hospital of the West Indies, Mona P.O. Jamaica, B.W.I., from whom further information can be obtained.

NEW ZEALAND. MARLBOROUGH HOSPITAL BOARD. Applications are invited for position of Whole-time RADIOLOGIST (Junior or Senior Specialist) at Wairau Hospital, Blenheim, New Zealand (171 Beds). Reasonable travelling costs refunded.

Further details available from New Zealand House, London, W.C.2.

NEW ZEALAND. COOK HOSPITAL BOARD, Gisborne, NEW ZEALAND. Applications, closing on Monday, 3rd December, 1956, are invited from registered medical practitioners for the appointment of PATHOLOGIST.

Salary in accordance with the Hospital Employment regulations salary rates for the following gradings :—

Senior Specialist : £2000–£2300.
Junior Specialist : £1600–£1900.

The amounts quoted are in New Zealand currency.

The position is non-resident but the Board will endeavour to make available temporary accommodation, Gisborne, with a population of 21,000, is situated on the sea coast and enjoys an ideal climate.

An information leaflet giving conditions of appointment may be obtained from The High Commissioner for New Zealand, 415, Strand, London, W.C.2. Completed applications to be sent by air-mail direct to Cook Hospital Board, Gisborne, N.Z.

WESTERN AUSTRALIA. ROYAL PERTH HOSPITAL. Applications are invited for the vacant post of PATHOLOGIST. Salary £A2950 p.a. Conditions equivalent to State Public Service, including long service leave and provision for superannuation. The Royal Perth Hospital is the main Teaching Hospital associated with the University of Western Australia. It has more than 600 Beds and is extending. The Hospital's Pathology Department is under the direction of the Professor of Pathology. The vacant position is that of a Senior Pathologist able to take responsibility for the Hospital's work in pathology under the general supervision of the Professor. It is envisaged that the selected candidate will in addition be encouraged to take part in teaching. A memorandum of further particulars concerning this position will be supplied upon request either to the undersigned or the Agent General for Western Australia, Savoy House, Strand, London, W.C.2.

In addition to all relevant personal details, applications must include particulars of qualifications, experience, publications ; the names of 2 referees ; and should reach the undersigned on or before 31st December, 1956.

JOSEPH GRIFFITH, Administrator.

Hospital Services : Junior Appointments

BROMPTON HOSPITAL, S.W.3. Applications invited for post of RESIDENT MEDICAL OFFICER (Registrar grade). Candidates must have held a resident hospital appointment and not be under 25 years of age. Appointment is for 1 year in the first instance.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 14th November to—

KENNETH A. F. MILES, House Governor.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, London, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. DENTAL REGISTRAR required for whole-time duties at hospitals in the Central Middlesex Group. Salary £850 p.a. in first year, £965 p.a. in second year ; subject to terms and conditions of service for hospital medical and dental staff. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 30th November, 1956.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) HOUSE SURGEON required for 6 months (General Surgery and Special Departments). Post vacant 1st December, 1956. Recognised for F.R.C.S.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of FIRST HOUSE PHYSICIAN for medicine and pædiatrics, to become vacant 1st January, 1957. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 14th November, 1956.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of OBSTETRIC HOUSE SURGEON (recognised for the M.R.C.O.G.). Duties to commence 1st January, 1957. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 14th November, 1956.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from registered Women medical practitioners for the post of RESIDENT GYNÆCOLOGICAL AND OBSTETRIC REGISTRAR (recognised for the M.R.C.O.G. in gynæcology). Duties at this Hospital and the Garrett Anderson Maternity Home. Appointment for 1 year in the first instance, to commence 1st December, 1956. Salary in accordance with Ministry of Health scale for Registrars.

Applications, with names of 3 referees, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, as soon as possible.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of SECOND HOUSE SURGEON. Appointment for 6 months from 1st January, 1957. Salary according to Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 14th November, 1956.

GUY'S HOSPITAL, S.E.1. Applications are invited for the post of REGISTRAR (middle grade) in Diagnostic Radiology at Guy's Hospital. The appointment will be until 30th September, 1957, in the first instance, commencing as soon as possible, and applicants should hold a Diploma in Radiology.

Forms of application are obtainable from, and should be lodged with, the Superintendent, Guy's Hospital, London Bridge, S.E.1, not later than 16th November, 1956.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 12-month resident appointment of SENIOR CASUALTY OFFICER (Senior House Officer grade), vacant 6th December should reach secretary, above address, by 17th November, quoting HH/SCO.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 6 months resident appointment of CASUALTY OFFICER AND E.N.T. HOUSE SURGEON (House Officer grade) should be sent immediately to the Secretary, above address, quoting HH/CHO.

HACKNEY HOSPITAL, London, E.9. (General—341 Beds.) Applications are invited for the 12 months resident appointment, vacant 19th December, of SENIOR HOUSE OFFICER (obstetrics and gynæcology). Post recognised for M.R.C.O.G.

Apply Group Secretary, above address, by 24th November, quoting HH/SHO/O.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, N.21. CASUALTY OFFICER (Senior House Officer grade), resident.

Applications, with copies of 3 testimonials and name and address of 1 referee, to Hospital Secretary.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, London, N.W.8. Applications are invited from pre-registration or registered medical practitioners (Male) for the appointment of HOUSE SURGEON to the Midwifery and Gynæcological Departments, to become vacant on Monday, 10th December, 1956. Appointment will be for a period of 6 months. National Health Service salary.

Applications to reach the Secretary on or before Friday, 30th November, 1956, together with copies of 3 recent testimonials.

KING'S COLLEGE HOSPITAL BOARD OF GOVERNORS AND THE SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Physical Medicine to be made jointly by the bodies concerned, the post to be held at King's College Hospital and in the Lewisham, and Sidcup and Swanley Hospital Groups. Applicants should hold a higher qualification in general medicine and the Diploma in Physical Medicine. The appointment, which will commence on 1st February, 1957, is until 30th September, 1957, in the first instance, and is renewable annually until 30th September, 1959.

Applications, stating age, education, qualifications and experience, and giving the names of 2 referees, should be sent to the undersigned not later than 1st December, 1956.

S. W. BARNES, House Governor.

King's College Hospital, Denmark-hill, S.E.5.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of RESEARCH ASSISTANT in Neurosurgery. Candidates must have had training in neurosurgery. The salary will be approximate to that of Senior Registrar according to experience.

Applications (12 copies), giving details of academic career and the names and addresses of 3 referees, should be received by the undersigned by 20th November, 1956.

H. BRIERLEY, House Governor.

MIDDLESEX HOSPITAL, W.1. Applications invited for non-resident post of SENIOR HOUSE OFFICER in the Department of Physical Medicine and Rheumatism.

Rules and application forms obtainable from Deputy Superintendent should be returned, naming 2 referees, by 8th December.

MILE END HOSPITAL, Bancroft-road, London, E.1. (484 Beds. Obstetric beds 69 : Gynæcological beds 31.) Applications are invited for the following posts :—

SENIOR HOUSE OFFICER (obstetrics and gynæcology), vacant on 31st December, 1956.

HOUSE SURGEONS (post-registration), obstetrics and gynæcology. Vacancies on 7th December, 1956, and 15th February, 1957.

The above posts are recognised for the M.R.C.O.G.

Application forms, obtainable from Physician-Superintendent, to be returned by 16th November, 1956, with copies of not more than 3 testimonials.

NELSON HOSPITAL, Kingston-road, Merton, S.W.20. HOUSE SURGEON (resident), not pre-registration, vacant 22nd November. Post recognised for F.R.C.S.

Applications, stating age, qualifications, &c., with the names and addresses of 2 referees, to the Secretary at above address.

NATIONAL HEART HOSPITAL, Westmoreland-street, W.1 (with which is associated the Institute of Cardiology). The Board of Governors invites applications to fill a vacancy in the post of REGISTRAR. Applicants should have been fully trained in general medicine and should possess a higher medical qualification. Opportunities for research available.

Applications, with copies of 3 recent testimonials, should be sent to me not later than Saturday, 17th November, 1956.

ROBERT G. E. WHITNEY, Secretary to the Board.

NATIONAL HEART HOSPITAL, Westmoreland-street, W.1 (with which is associated the Institute of Cardiology). Applications are invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER (Male). The appointment is for a period of 6 months from 1st January, 1957, but may be renewed for a further period of 6 months. The status and salary are those of a Senior House Officer and are in accordance with the national terms and conditions of service.

Applications, with copies of 3 recent testimonials, should be sent to me not later than Saturday, 24th November, 1956.

ROBERT G. E. WHITNEY, Secretary to the Board.

NORTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD.

REGISTRAR in General Medicine and Pædiatrics (resident), St. John's and Chelmsford and Essex Hospitals, Chelmsford, Essex. Duties in the general medical wards of both hospitals and in Group Pædiatric, Premature Baby and Neo-natal Departments.

PSYCHIATRIC REGISTRAR (resident or non-resident), Warley Hospital, Brentwood, Essex. Recognised for D.P.M.

REGISTRAR in Obstetrics and Gynæcology (resident), North Middlesex Hospital and Annexes, Silver-street, Edmonton, N.18. 135 obstetric and 60 gynæcological beds. Recognised for M.R.C.O.G., as combined post.

OBSTETRIC REGISTRAR (Female—resident), Thorpe Coombe Maternity Hospital, Forest-road, E.17. Recognised for M.R.C.O.G.

SURGICAL REGISTRAR (resident or non-resident, married accommodation available), General Hospital, Rochford, Essex, Group appointment but duties mainly at Rochford General Hospital (620 Beds). Recognised for F.R.C.S.

SURGICAL REGISTRAR (resident or non-resident), Bethnal Green Hospital, E.2. Recognised for F.R.C.S.

ANÆSTHETIC REGISTRAR (resident), Herts and Essex General Hospital, Bishop's Stortford, Herts.

ANÆSTHETIC REGISTRAR (resident), St. Margaret's Hospital, Epping, Essex. Recognised for F.F.A.R.C.S., and D.A.

ANÆSTHETIC REGISTRAR (resident or non-resident), King George Hospital, Ilford, Essex. Recognised for F.F.A.R.C.S. and D.A.

Appointments subject to review after 1 year.

Application forms from Secretary, 11a, Portland-place, W.1, to be returned by 24th November, 1956.

PUTNEY HOSPITAL, Lower Common, S.W.15. House PHYSICIAN (resident). Male or Female, vacant 4th December, 1956. Open to pre-registration candidates.

Apply Hospital Secretary not later than 14th November, 1956, enclosing copies of 3 recent testimonials.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. HOUSE SURGEON (pre-registration) for 6 months commencing 15th December, 1956. Post recognised for F.R.C.S.

Applications, with 2 recent testimonials, to Hospital Secretary by 17th November, 1956.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of SURGICAL REGISTRAR at the Royal Free Hospital, Gray's Inn-road. The appointment is for 1 year in the first instance, duties to commence on 1st January, 1957. Candidates should be registered medical practitioners of not more than 10 years standing and Fellows of the Royal College of Surgeons. Salary and conditions of service in accordance with the scale laid down by the Ministry of Health for Registrars.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 25th November, 1956.

ROYAL FREE HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER in General Medicine to the Departments of Physical Medicine, Rheumatology and Psychiatry at the Royal Free Hospital. The appointment is full-time, non-resident, for 6 months in the first instance. Duties to commence 1st January, 1957. Salary and conditions of service in accordance with those laid down by the Ministry of Health for Senior House Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 30th November, 1956.

ROYAL FREE HOSPITAL. Applications are invited for the post of Locum SENIOR RESIDENT MEDICAL OFFICER at the Royal Free Hospital, Gray's Inn-road, as from 1st January, 1957. Terms and conditions of service in accordance with those laid down by the Ministry of Health for locum Junior Hospital Medical Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 30th November, 1956.

ROYAL MARSDEN HOSPITAL, Fulham-road, S.W.3. Applications are invited for 2 full-time appointments of REGISTRAR in the Radiotherapy Department. 1 shortly vacant and 1 becoming vacant in March, 1957. Salary £850 p.a. Candidates must hold a Diploma in Medical Radiology.

Forms of application are obtainable from the House Governor, to whom applications, together with the names of 3 referees, should be sent by 17th November, 1956.

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1. RESIDENT HOUSE SURGEON (post-registration post). Applications are invited for a 6 months appointment as from 8th December, 1956, with salary and conditions as laid down for House Officers in the terms and conditions of service in the National Health Service.

Applications, stating age, qualifications, full details of previous experience (particularly in this specialty), with copies of 1–3 recent testimonials, should be sent to the House Governor without delay.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL AND INSTITUTE OF LARYNGOLOGY AND OTOLOGY, Gray's Inn-road, W.C.1, and Golden-square, W.1. Applications are invited for a post of SENIOR REGISTRAR with effect from 1st January, 1957. The appointment will be for an initial period of 1 year, subject to annual re-election thereafter up to the maximum permissible term in this grade, and otherwise in accordance with the terms and conditions of service in the National Health Service. Applicants must have had considerable experience in general surgery and in this specialty and hold a higher surgical qualification.

Applications should give full information as to qualifications and experience, and the names of 2 referees, and be sent in duplicate to the House Governor before 3rd December.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, London, W.1. Applications are invited for the appointment of ORTHOPÆDIC REGISTRAR (full-time) non-resident. Preference will be given to candidates with a higher surgical qualification. Duties to commence on 26th January, 1957.

Applications to be received not later than 23rd November, 1956. Forms of application can be obtained from the House Governor at 234, Great Portland-street, London, W.1.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. Applications are invited for 2 posts of HOUSE SURGEON, vacant early January, 1957. Preference given to pre-registration candidates. Recognised for F.R.C.S.

Applications, with copies of recent testimonials, to be sent to the Hospital Secretary by 20th November, 1956.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Radiology, X-ray Diagnostic Department, required at above Hospital. D.M.R.D. essential. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, the Secretary, Royal Northern Hospital, Holloway-road, London, N.7, by 27th November, 1956.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. **SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.** Applications are invited from registered Women medical practitioners for the post of ANÆSTHETIC REGISTRAR (either resident or prepared to live within 20 minutes of the Hospital). D.A. desirable but not essential. Post recognised for D.A. The appointment is normally for 2 years, but subject to review at the end of 1 year, and will be vacant in January, 1957. Canvassing will disqualify but candidates are not precluded from visiting the Hospital if they so desire.

Forms of application (enclosing stamped addressed envelope) from the Group Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11, to whom completed applications should be returned not later than 24th November, 1956.

SOUTH WESTERN HOSPITAL, Landor-road, S.W.9. HOUSE PHYSICIAN (registered or pre-registration) required at the above Hospital. Combined T.B. and acute Medicine. Post vacant 8th December, 1956.

Form of application from the Secretary.

ST. MARY'S HOSPITAL, Paddington, W.2. Applications are invited from suitably qualified practitioners for the post of NON-RESIDENT CASUALTY SURGEON. Candidates must have held an appointment as House Surgeon at this Hospital or at another Hospital approved by the Board of Governors. The appointment is for a first period of 6 months, with effect from 1st January, 1957; remuneration to be at Senior House Officer rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 21st November, 1956.

ST. MARY'S HOSPITAL, Paddington, W.2. Applications are invited for the post of SENIOR REGISTRAR to the Almroth Wright Ward. The duties of the post require that 6 notional half-days should be devoted to the clinical charge of the 17 beds of the Wright Fleming Institute, together with some laboratory work in connection with cases in the Wards. The remaining 5 notional half-days to be devoted to research work in the Wright Fleming Institute of Microbiology. Some previous laboratory experience is desirable. The appointment will be for a period of 12 months, as from a date to be arranged. The grading of the post is Senior Registrar and payment will be made by the Board of Governors for 6 notional half-days; payment for the remaining 5 notional half-days will be made by the Wright Fleming Institute. The total salary, therefore, will be equivalent to a whole-time Senior Registrar appointment.

Applications, stating nationality, date of birth, permanent address, qualifications with dates and details of previous and present appointments, with gradings, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 27th November, 1956.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST for a period of 12 months. The successful candidate will be required to take up his duties as soon as possible. Applicants should have held 2 House Officer appointments at this Hospital or another hospital approved by the Board of Governors and preference will be given to those intending to specialise in pathology.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 27th November, 1956.

ST. MATTHEW'S HOSPITAL, Shepherdess-walk, London, N.1. SENIOR HOUSE OFFICER required for above Hospital (320 geriatric beds). Post vacant 26th November, 1956.

Apply, naming 2 referees, to Hospital Secretary within 7 days.

ST. NICHOLAS HOSPITAL, Plumstead, S.E.18. Senior HOUSE OFFICER (Casualty, Orthopædic and Fracture Departments), vacant now. Recognised for F.R.C.S. 6 months appointment and may then be renewed. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

WANSTEAD HOSPITAL, Hermon Hill, Wanstead, E.11. (191 Beds.) HOUSE PHYSICIAN required. Post vacant 20th December, 1956.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of MEDICAL REGISTRAR for 1 year in first instance. Post now vacant.

Applications (6 copies), with names of 2 referees, to House Governor by 24th November.

WHIPPS CROSS HOSPITAL, London, E.11. Applications are invited for the following posts which become vacant 1st January, 1957:—

Pre-registration HOUSE PHYSICIAN (2 posts), general medicine.

Pre-registration HOUSE SURGEON (3 posts), general surgery.

Application forms from the Hospital Secretary to be returned by 21st November, 1956.

WHITTINGTON HOSPITAL, London, N.19. Applications are invited for the post of PÆDIATRIC HOUSE PHYSICIAN. Post recognised for M.D. (London) and D.C.H. Pre-registration candidates who have held a first appointment may apply.

Application forms obtainable from the Group Secretary, 46, Cholmeley-park, London, N.6 (ARChway 3070, Extension 24), and returnable to the Medical Superintendent, Whittington Hospital, London, N.19, by 19th November.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. RESIDENT HOUSE SURGEON required 15th December, plus 14 days locum from 1st December. Pre-registration candidates eligible.

Applications, including names of 2 referees, to Hospital Secretary, by 21st November.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER in General Medicine and Cardiology with main duties in Aberdeen Royal Infirmary. Conditions of service in accordance with the terms issued by the Department of Health for Scotland.

Applications, with the names of 2 referees, should be lodged with the Secretary, Aberdeen General Hospitals, P.O. Box No. 92, 62, Queen's-road, Aberdeen, within 14 days of the appearance of this advertisement.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEON (Male) for Traumatic and Orthopædic Unit. 6 months appointment suitable for pre-registration candidates.

Applications, stating age, qualifications and experience with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

BARNSLEY. ST. HELEN HOSPITAL. (225 Beds. Recognised for M.R.C.O.G. examination.) **SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time RESIDENT REGISTRAR (obstetrics and gynæcology) required. Married accommodation available. There are 67 lying-in and ante-natal and 20 gynæcological beds at this Hospital. Post vacant 1st January, 1957. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 19th November, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

BARNSTAPLE. NORTH DEVON INFIRMARY. (Central Group Hospital of 105 Beds.) SENIOR HOUSE SURGEON post vacant from 1st January, 1957, for 1 year. Salary £745 p.a. (5-roomed furnished flat available for rental.)

Applications, with customary details, to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident or non-resident post of REGISTRAR in Anæsthetics in the Barrow and Furness Group of hospitals, based at the North Lonsdale Hospital, Barrow-in-Furness. Hospital approved for D.A.

Applications, giving age, details of experience, and names of 3 referees, to Group Secretary, 105, Abbey-road, Barrow-in-Furness.

BEDFORD (near). BROMHAM HOSPITAL. (434 Beds for mental defectives and 60 at Annexe near Sandy.) REGISTRAR in Psychiatry required (resident). Hospital may be visited by direct appointment with the Medical Superintendent (phone: Oakley 295).

Application forms obtainable from, and returnable to, Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (439 Beds.) House SURGEON required. Pre- or post-registration. Recognised for F.R.C.S. Post offers exceptional opportunities for general experience in busy acute Surgical Unit.

Inquiries and applications, with copies of 2 recent testimonials, to Group Secretary, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (439 Beds.) 2 Resident Pre-registration HOUSE PHYSICIANS required, 1 end November, 1 beginning December.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (439 Beds.) House SURGEON (mainly orthopædic). Pre- or post-registration; recognised for F.R.C.S. Required immediately. Post offers exceptional opportunities for general experience in busy acute surgical units.

Inquiries and applications, with copies of 2 recent testimonials, to Group Secretary, 3, Kimbolton-road, Bedford.

BEXHILL HOSPITAL, Bexhill. (62 Beds.) Resident HOUSE SURGEON (pre-registration) post vacant now. National scale of salary.

Apply to Hospital Administrator.

BIDEFORD AND DISTRICT HOSPITAL. (51 Beds.) Applications invited for post of HOUSE OFFICER, vacant mid-November. Flat available for married officer.

Applications, stating names of 2 referees, to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple, by 14th November, 1956.

BIRMINGHAM (near). MARSTON GREEN MATERNITY HOSPITAL, Berwicks-lane, MARSTON GREEN, near BIRMINGHAM. HOUSE SURGEON (obstetrics) required. Vacant 1st January, 1957. 121 obstetric and 10 gynæcological beds. Recognised for Diploma and Obstetric part of M.R.C.O.G. Premature Baby Unit. Hospital affiliated to Birmingham Medical School for training of students.

Detailed applications, with copies of 3 recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM REGIONAL HOSPITAL BOARD. BIRMINGHAM REGIONAL BLOOD TRANSFUSION SERVICE require 1 Part-time Medical Practitioner undertaking 4 notional half-days weekly. Duties attending blood donor sessions in the Region. Remuneration £175 per session p.a.

Applications (10 copies), stating name, age, nationality, present and previous appointments and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, by 26th November, 1956. Further information from Director, Blood Transfusion Service Centre, 15, Ampton-road, Birmingham, 15.

BIRMINGHAM REGIONAL HOSPITAL BOARD. 2 Whole-time SENIOR REGISTRARS in Ophthalmology.

(*a*) Duties at North Staffordshire Royal Infirmary (455 Beds). Higher qualification/wide experience specialty essential. Resident/non resident (3 miles radius of Hospital).

(*b*) Duties at Wolverhampton Eye Infirmary (95 Beds). Post offers good all-round experience specialty. Ophthalmic Diploma required and higher qualification advantage.

Successful applicants may subsequently be required to spend not more than 2 years in a selected hospital of the United Birmingham Hospitals or other regional centre.

Application forms from Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15, to be returned by 26th November. Candidates may visit Hospitals.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) **Birmingham (Dudley Road) Group, Dudley Road Hospital, Birmingham, 18**

REGISTRAR (E.N.T. surgery) required at Birmingham and Midland Ear and Throat Hospital. Resident. Recognised for D.L.O. and F.R.C.S.

(2) **Birmingham (Selly Oak) Group, Oak Tree-lane, Birmingham, 29**

(*a*) REGISTRAR (general medicine) for Little Bromwich General Hospital, in metabolic unit. Non-resident. Associated with University of Birmingham. Previous experience metabolic work most desirable.

(*b*) SURGICAL REGISTRAR. Duties with Burns Unit for Birmingham Accident Hospital. Possible transfer to accident surgery team after 6 months. General surgical experience essential, higher qualifications an advantage.

(*c*) ORTHOPÆDIC REGISTRAR. F.R.C.S. desirable—experience in orthopædic surgery for Royal Orthopædic Hospital. Resident.

(3) **West Bromwich Group, Edward-street, West Bromwich**

Whole-time REGISTRAR (anæsthetics). Duties at Midland Centre for Neurosurgery, Smethwick Hospital and other Group hospitals. Experience specialty required. Married quarters available.

Application forms from Group Secretaries to be returned by 19th November, 1956.

BIRMINGHAM. THE SKIN HOSPITAL, Inpatients' DEPARTMENT, George-road, BIRMINGHAM, 15. SENIOR HOUSE OFFICER or HOUSE OFFICER according to experience. Modern well-equipped Inpatients Department, providing facilities for study of skin diseases. Required to assist Consultant at outpatient clinics.

Applications, with copies of 2 recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. QUEEN ELIZABETH HOSPITAL. Applications are invited for the post of MEDICAL REGISTRAR (Registrar grade). The post is tenable for 1 year in the first instance. Candidates should have the M.R.C.P. (London). The successful candidate may be required to be resident.

Forms of application may be obtained from, and should be returned not later than 17th November, 1956, to, the Secretary, The United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS, THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. Applications are invited for the post of RESIDENT MEDICAL OFFICER (second of 2) Senior House Officer grade, vacant 1st January, 1957, for 1 year. Main duty to take charge of Infants Block (66 Cots). Valuable opportunity for further study of diseases of infancy, some previous experience of which is desirable. M.R.C.P. preferred.

Forms of application available from the House Governor and should be returned to him by 22nd November, 1956.

G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the appointment of NON-RESIDENT REGISTRAR or SENIOR HOUSE OFFICER (E.N.T. Department) for duties within the United Hospitals including the Children's Hospital. The grading of the appointment will be based on the experience of the candidate.

Forms of application may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15, and should be returned not later than 17th November, 1956.

BIRMINGHAM, 9. YARDLEY GREEN HOSPITAL. THORACIC SURGICAL UNIT. (66 Beds.) Vacancy for SENIOR HOUSE OFFICER. No previous experience in thoracic surgery necessary.

Applications, stating age, qualifications, training, and experience, together with names of 2 referees, to be addressed to Group Secretary, Yardley Green Hospital, Birmingham, 9.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. HOUSE OFFICER (including pre-registration) required.

Apply to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BLACKBURN. ROYAL INFIRMARY. (262 general beds.) BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (casualty and orthopædics) required 11th December, 1956. Post is recognised for F.R.C.S. Junior Hospital Medical Officer post can be for any period up to 4 years and a starting salary above the minimum of the scale may be approved on account of special experience or qualifications.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn, Lancs.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of GENERAL HOUSE SURGEON. The appointment, which becomes vacant on 28th November, 1956, is recognised for the F.R.C.S. examination and for pre-registration purposes, and favourable consideration will be given to suitable applicants for subsequent House Physician appointments.

Applications to the Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (resident) orthopædic and casualty combined. The post, which becomes vacant on 10th November, is recognised for the F.R.C.S. examination.

Applications to the Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Anæsthetics (resident) at the above Hospital. The post, which becomes vacant at the end of November is tenable for 1 year in the first instance. Applicants should have had considerable experience in anæsthesia.

Forms of application, obtainable from the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe, should be returned to him, duly completed, not later than Monday, 19th November, 1956.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HAMPSHIRE. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration Intern) required for general medicine for posts becoming vacant on 15th December, 1956, at the above Hospital of 259 Beds (including 79 acute medical, 34 pædiatric, 6 chest diagnostic and a geriatric unit). Duties also include attendance at outpatient clinics at the Royal Victoria Hospital, Boscombe, Bournemouth.

Applications, with copies of testimonials, to the Hospital Secretary at the Hospital.

BISHOP AUCKLAND, co. DURHAM. THE GENERAL HOSPITAL. (350 Beds.) HOUSE SURGEON required. Recognised pre-registration post.

Apply, naming 2 referees, to K. G. T. LUXFORD, Group Secretary, South West Durham Hospital Management Committee, at the above address.

BRAINTREE. BLACK NOTLEY HOSPITAL. (536 Beds.) Applications invited for post of SENIOR HOUSE OFFICER for Non-pulmonary Tuberculosis Unit of approximately 120 Beds, particularly for skeletal and renal tuberculosis. Recognised for F.R.C.S.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards for the joint appointment of SENIOR REGISTRAR in Psychiatry to the Plymouth Clinical Area based on Moorhaven Hospital, Ivybridge, South Devon. The appointment will be held for 1 year in the first instance but may be renewed thereafter on an annual basis. A flat is available suitable for a married man. A comprehensive mental health service is in operation, and experience can be gained in all branches of inpatient and outpatient work (including neurology, mental deficiency, and child guidance). The outpatient service is based on the South Devon and East Cornwall Hospital, Plymouth, and the Plymouth Child Guidance Clinic. The 1955 Annual Report which gives full particulars of the service can be obtained from the Physician-Superintendent, Moorhaven Hospital.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 24th November, 1956.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards for the joint appointment of REGISTRAR in Obstetrics and Gynæcology. The appointment will be held for 1 year in the first instance and be renewable for a further year. The successful candidate will be appointed to work for the first year mainly at Camborne-Redruth Hospital, Redruth, Cornwall (56 obstetric and 31 gynæcological beds), but may be required to undertake duties in other hospitals in the Group. The post, which is resident, is recognised for the M.R.C.O.G.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 24th November, 1956.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards for the joint appointment of SENIOR REGISTRAR in Radiodiagnosis to the North Gloucestershire Clinical Area. The appointment will be held for 1 year in the first instance but may be renewed thereafter on an annual basis. The successful candidate will be appointed to work for the first year mainly at Cheltenham General Eye and Children's Hospital but will be required to visit other hospitals in the Clinical Area as determined by the Regional Board from time to time.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 24th November, 1956.

BRISTOL CLINICAL AREA. The Board of Governors of THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards for the joint appointment of SENIOR REGISTRAR in General Surgery. The appointment will be held for 1 year in the first instance but may be renewed thereafter on an annual basis. The successful candidate will be appointed to work for the first year mainly at Southmead Hospital, Bristol, and to visit other hospitals in the Clinical Area as determined by the Regional Board from time to time.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 24th November, 1956.

BRISTOL (near). HAM GREEN HOSPITAL, Pill, near BRISTOL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in the Tuberculosis Wards of the above Hospital. The Hospital is fully equipped for modern treatment of pulmonary tuberculosis, including regular major thoracic surgery; opportunities also for work in the Bristol Chest Clinic. Appointment for 1 year, renewable. Post now vacant.

Applications, with testimonials or names of referees, should be sent to the Hospital Secretary, Ham Green Hospital, Pill, near Bristol.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of HOUSE PHYSICIAN to the Medical Unit. Vacant 20th December, 1956. Salary in accordance with national scale. This is recognised as a pre-registration appointment.

Applications, stating age, qualifications and experience, together with copies of recent testimonials, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7, as soon as possible.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of HOUSE SURGEON (recognised for F.R.C.S.) to the General Surgical Unit (60 Beds). The post will be vacant on 17th December, 1956. Salary in accordance with national scale. The post is recognised as a pre-registration appointment.

Applications, stating age, qualifications, experience, and giving the names of 2 referees, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (261 Beds.) Applications invited, with names of 3 referees, to Hospital Secretary by dates indicated.

(*a*) HOUSE OFFICER or SENIOR HOUSE OFFICER for orthopædic and casualty duties; recognised for F.R.C.S. (surgical); vacant late January; by 15th December. A Junior Hospital Medical Officer Casualty Officer is also in post.

(*b*) HOUSE PHYSICIANS for (i) general medical duties and, (ii) pædiatric and general medical duties; vacant late November and late December respectively; by 24th November.

(*c*) HOUSE SURGEONS for (i) general surgical and other duties and, (ii) general surgical (latter recognised for F.R.C.S.); vacant late November and early January respectively; by 24th November and 15th December respectively.

(*d*) HOUSE SURGEON (gynæcological and obstetric duties); recognised for D.Obst.R.C.O.G.; vacant late January; by 15th December.

All posts except (*a*) as shown are recognised for pre-registration but for post (*d*) considered advisable to have held a previous post.

CARDIFF (near). CAERPHILLY DISTRICT MINERS HOSPITAL. (226 acute general beds.) HOUSE OFFICER in Obstetrics and Gynæcological Department at above Hospital, vacant shortly. Pre-registration recognition anticipated.

Applications, stating age, qualifications, &c., and names of 2 referees, to Group Secretary, Rhymney and Sirhowy Valleys Hospital Management Committee, Central Offices, Caerphilly-road, Ystrad Mynach, Hengoed, Glamorgan, by 13th November, 1956.

CARDIFF (near). CAERPHILLY DISTRICT MINERS HOSPITAL. (226 general beds.) SENIOR HOUSE OFFICER (general surgery). Married quarters may be available.

Apply to Group Secretary, Rhymney and Sirhowy Valleys Hospital Management Committee, Central Offices, Caerphilly-road, Ystrad Mynach, Hengoed, Glam.

CARDIFF. UNITED CARDIFF HOSPITALS (Llandough HOSPITAL) AND MEDICAL RESEARCH COUNCIL (PNEUMOCONIOSIS RESEARCH UNIT). Applications are invited for the post of REGISTRAR to spend part of his time in the Miners' Chest Diseases Treatment Centre at the above-mentioned Hospital and part in the Medical Research Council's Unit, where he will have an opportunity to assist with clinical trials. The Centre caters for all types of chest diseases.

Application forms can be obtained from the Secretary to the Board at Cardiff Royal Infirmary, Cardiff, and should be returned not later than 21st November.

CAMBRIDGE. MATERNITY HOSPITAL. Resident OBSTETRICAL OFFICER (second or subsequent post) for 6 months from 1st January. Recognised Pre-registration Service. Recognised for M.R.C.O.G. and D.Obst.R.C.O.G. examinations.

Apply, stating age, nationality, qualifications and experience, with dates, and copies of 3 testimonials, to Secretary, United Cambridge Hospitals, Addenbrooke's Hospital, by 24th November. Interviews early December.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Casualty OFFICER (Senior House Officer grade), required at above Hospital about December, non-resident if desired.

Apply, with full particulars and copies of 3 recent testimonials, to the Secretary by 24th November.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. SENIOR RADIOLOGICAL REGISTRAR. Post vacant now. Candidates may visit Hospital by arrangement with the Director of Radiology (Tel.: Fairlands 4343—Ext. 37).

Forms of application, to be returned by 21st November, obtainable from the Group Secretary at above address.

CARSHALTON. QUEEN MARY'S HOSPITAL FOR CHILDREN. (853 Beds.) ORTHOPÆDIC REGISTRAR, with some surgical duties, required. Applicants are invited to visit the Hospital by appointment with the Physician-Superintendent.

Applications, which should be made on forms obtainable from the Group Secretary, should be returned by 1st December, 1956.

CHELMSFORD AND ESSEX HOSPITAL. (162 Beds.) Applications invited from pre-registration candidates, or others, for the post of HOUSE SURGEON. Recognised for F.R.C.S. Tenable for 6 months from 22nd November. The successful candidate will have the option of proceeding immediately to the post of House Physician for a further period of 6 months.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON required immediately. 100 orthopædic beds. Senior House Officer or House Officer (intern grade). Post recognised for F.R.C.S. and Pre-registration Service. Preference given to provisionally registered candidates. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, Chertsey, as soon as possible.

CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER in Medicine under supervision of Consultant Physicians, with main duties in Geriatric Unit (150 Beds) at St. Richard's Hospital (400 Beds). Facilities are available for investigation and treatment of acute and chronic disease, pre-admission assessment, and follow-up clinic. Post resident or non-resident. National Health Service terms and conditions of service. Salary £775–£50–£1075 p.a.

Applications, stating age, nationality, qualifications and experience and naming 2 referees, to Group Secretary, 174, Broyle-road, Chichester, Sussex.

CREWE AND DISTRICT MEMORIAL HOSPITAL (108 Beds—Acute), AND BARONY HOSPITAL MATERNITY UNIT, NANTWICH (32 Beds). SENIOR HOUSE OFFICER (gynæcology and obstetrics) required. Salary and conditions in accordance with Whitley Council scale.

Applications, stating age, qualifications and experience, together with names of 3 referees, to Group Secretary, South Cheshire Hospital Management Committee, Barony Hospital, Nantwich, Cheshire.

CROYDON GENERAL HOSPITAL. House Surgeon (pre-registration) required. Post recognised for F.R.C.S.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned immediately.

CROYDON. MAYDAY HOSPITAL. (611 Beds.) Croydon GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (pre-registration) required from 20th November, 1956. Post recognised for F.R.C.S. examination.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, London-road, Croydon.

CROYDON. QUEEN'S HOSPITAL. (450 Beds.) Geriatric UNIT. CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident). Post vacant as from 24th November.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned within 14 days.

COVENTRY. GULSON HOSPITAL. House Officer (pædiatrics). Recognised D.C.H. Pre-registration. Vacant 1st January, 1957.

Apply Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Senior HOUSE OFFICER (orthopædic), vacant 1st December, 1956. Recognised for F.R.C.S.

Apply, stating full details, with copies of 2 recent testimonials, to Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (416 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT MEDICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 19th November, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DEWSBURY, YORKSHIRE. STAINCLIFFE GENERAL HOSPITAL. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Senior House Officer grade) which becomes vacant 27th December, 1956. The Hospital is recognised for the F.R.C.S. and the Surgical Unit comprises 52 Beds for general surgery.

Applications, giving full details, should be sent to the Administrative Officer at the Hospital.

DONCASTER ROYAL INFIRMARY. (330 Beds.) Applications are invited for the post of HOUSE SURGEON (Senior House Officer). Post recognised for F.R.C.S.

Applications to the Group Secretary, Doncaster Hospital Management Committee, at Doncaster Royal Infirmary.

DORCHESTER. DORSET COUNTY HOSPITAL. West DORSET GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SURGICAL REGISTRAR (Registrar grade) at above Hospital. Salary according to experience, with a deduction at the rate of £170 p.a. for residence. Canvassing will disqualify, but Hospital may be visited by arrangement.

Application form obtainable from Group Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, Dorset.

DOUGLAS, ISLE OF MAN. NOBLE'S ISLE OF MAN HOSPITAL. (160 Beds.) Applications are invited from registered medical practitioners with previous hospital experience, preferably at a teaching hospital, for the post of SENIOR HOUSE SURGEON at this busy General Hospital. The Senior of 4 House Officer posts. The post becomes vacant mid-November, and is suitable for candidate seeking further clinical experience and opportunity for reading for higher qualification. Recognised for F.R.C.S. Salary £745 p.a. with a deduction of £125 p.a. for board, lodging, &c., if resident.

Applications, giving relevant particulars, and copies of 2 recent testimonials, or names and addresses of 2 referees, should be forwarded to the Secretary, Noble's Isle of Man Hospital, Douglas.

DRIFFIELD, YORKSHIRE. NORTHFIELD SANATORIUM. (78 Beds.) SENIOR HOUSE PHYSICIAN, vacant now. Offers experience all branches of tuberculosis within Group, including surgery, M.M.R., and clinics. Time for study. Ex-patients welcome. £150 for full residence.

Applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) SENIOR HOUSE PHYSICIAN, vacant now. Salary £745, less emoluments. Duties to include acute and chronic medicine.

Detailed applications, with references, to the Group Secretary, Westwood Hospital, Beverley, Yorkshire.

EDINBURGH. PRINCESS MARGARET ROSE HOSPITAL. Applications are invited from registered medical practitioners and pre-registration graduates for the appointment of RESIDENT HOUSE SURGEON to commence as soon as possible. National Health Service scale.

Applications, stating age, qualifications and experience, and names of 2 referees, to be sent immediately to Medical Superintendent, Edinburgh Central Hospitals, 18, Rillbank-terrace, Edinburgh, 9.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON required 11th December. Pre-registration post, recognised for F.R.C.S.

Applications, stating age, qualifications, and experience with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from pre-registration and registered medical practitioners for the appointment of HOUSE SURGEON (general surgery) vacant 6th December, 1956.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary immediately.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. Appointment of RESIDENT HOUSE SURGEON (third post), vacant 30th December, 1956. Post provides experience and duties in both general surgery and orthopædics. 6 months appointment. Post recognised for F.R.C.S. by the Royal College of Surgeons.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee.

EPPING. ST. MARGARET'S HOSPITAL. House PHYSICIAN (pre-registration post) to Consultant in General Medicine. Post vacant 1st January, 1957.

Applications, with copies of testimonials, including 1 from medical school, to reach the Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex, by 23rd November, 1956.

EPPING. ST. MARGARET'S HOSPITAL. Senior House OFFICER (orthopædics) for orthopædics and casualty. Recognised training post for F.R.C.S. Salary on national scale, less deduction for board, lodging, &c.

Applications, with copies of 2 recent testimonials, to be sent immediately to the Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex.

EPPING. ST. MARGARET'S HOSPITAL. House SURGEON (pre- or post-registration) to very busy General Surgical Unit. Hospital within easy reach of Central London. Post vacant 1st January, 1957.

Applications, with copies of testimonials, including 1 from medical school, to reach the Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex, by 23rd November, 1956.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR, United Norwich Hospitals. Recognised for F.F.A.R.C.S. and D.A. Appointment for 1 year, renewable for second year.

Applications, stating age, experience and names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 19th November, 1956. Candidates invited to visit hospitals by direct arrangement with Hospital Management Committee Secretary, Norfolk and Norwich Hospital.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Pathology (non-resident) required at above Hospital. Appointment for 1 year in first instance. Previous experience in pathology desirable. Hospital may be visited by direct arrangement with the Medical Director.

Application forms obtainable from, and returnable to, the Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, Edgware, Middlesex, by 17th November, 1956.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE PHYSICIAN, vacant 2nd December, 1956.

Apply to Hospital Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) Applications are invited for the post of HOUSE SURGEON (general surgery) vacant early November.

Apply as soon as possible to Hospital Administrator.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. HOUSE PHYSICIAN (pre-registration) required.

Applications, giving full details and 2 names for reference, should be sent to the Hospital Secretary.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of RESIDENT HOUSE PHYSICIAN (Male or Female), second post held. Recognised pre-registration post. 6 months appointment. Preference given to applicants who have held resident surgical or medical posts in general hospital. Duties to commence 3rd December, 1956.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HITCHIN, HERTFORDSHIRE. NORTH HERTS HOSPITAL. Applications are invited for the post of RESIDENT HOUSE SURGEON, vacant 3rd December, 1956. Recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator, Lister Hospital, Hitchin, as soon as possible.

HITCHIN HOSPITALS, Hitchin, Hertfordshire. Resident ANÆSTHETIST (Senior House Officer) required 1st January, 1957. The post offers varied experience, and is recognised for the D.A. and F.F.A.R.C.S. examinations.

Applications, stating age, nationality, qualifications and experience, together with names of 2 referees, to be sent to the Medical Administrator, Lister Hospital, Hitchin, as soon as possible.

HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered medical practitioners for the post of HOUSE SURGEON to the Princess Royal Maternity Home (57 Beds), to commence duty on 21st November, 1956. The holder of the post, which is recognised for the D.Obst.R.C.O.G., will have access to the abnormal maternity and gynæcological beds at The Royal Infirmary. The Department is under the control of 2 Consultant Obstetricians and Gynæcologists. Salary in accordance with national scale.

Applications to be addressed to—

H. J. JOHNSON,
Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HULL. KINGSTON GENERAL HOSPITAL. (419 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT JUNIOR HOUSE SURGEON. Recognised for the F.R.C.S. examinations. (Pre- or post-registration.) Busy acute general surgical unit.

Applications, with 2 recent testimonials, to the Hospital Secretary.

ILFORD. KING GEORGE HOSPITAL. There will be a vacancy for a CASUALTY OFFICER at the above Hospital on 10th December, 1956, at a salary of £745 p.a., resident or non-resident. Senior House Officer grade. This post is recognised for the F.R.C.S.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary, Ilford and
Barking Group Hospital Management Committee.
King George Hospital, Ilford.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue, ILFORD. There will be vacancies for the following at above Hospital.

HOUSE SURGEON—1st December, 1956. First or second post pre-registration.

HOUSE SURGEON—21st December, 1956. Second post pre-registration.

The posts will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary, Ilford
and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (Pædiatric Department), whole-time, vacant 1st January. Previous pædiatric experience essential. Duties include work in Children's Unit (90 Beds), Neonatal Unit and pædiatric outpatient clinics. Candidates may visit Hospital by appointment with Medical Director.

Application forms obtainable from, and returnable to, Secretary, South West Middlesex Group Hospital Management Committee, West Middlesex Hospital, Isleworth, by 21st November, 1956.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to Consultant General Surgeon. The post is recognised for pre-registration and for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the E.N.T. and Ophthalmic Departments, vacant on 15th December, 1956. The post is recognised for pre-registration and for the D.L.O. examination.

Applications, giving full particulars and copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Heath ROAD WING, IPSWICH. (274 Beds.) Applications invited for the post of HOUSE SURGEON (pre-registration) to General Surgeons. The post, vacant shortly, is recognised for the R.C.S. examinations.

Applications, with full details and copies of recent testimonials, to the Hospital Secretary.

KINGSTON HOSPITAL, Wolverton-avenue, Kingston UPON THAMES. KINGSTON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from suitably qualified and experienced medical officers for the post of SENIOR HOUSE OFFICER (E.N.T.). The post which is recognised for D.L.O. purposes includes a small amount of relief duties in the Casualty Department and is available on 1st January, 1957. Resident or on a Duty Room basis.

Applications, stating age, qualifications, and experience, with 2 recent testimonials, should reach the Physician-Superintendent of the Hospital by 19th November, 1956.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Anæsthetics

Huddersfield Group (approximately 225 Beds in the surgical specialties). Non-resident.

General and Orthopædic Surgery

Halifax Group. 1 of 3 similar posts divided approximately between general and orthopædic surgery (195 general surgical and 85 orthopædic beds). May include some duties in the Casualty Department. Preferably resident.

Infectious Diseases

Castle Hill Hospital, Cottingham (167 infectious diseases beds). Resident.

Orthopædic Surgery

Pinderfields General Hospital, Wakefield (70 short-stay and 160 long-stay orthopædic beds), and at other hospitals in the Wakefield A and B Groups. Recognised for F.R.C.S.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 23rd November, 1956.

LEEDS REGIONAL HOSPITAL BOARD. Senior Regis-TRAR vacancy.

Otolaryngology

Duties mainly at the Royal Eye and Ear Hospital, Bradford (67 E.N.T. beds in the Group).

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 16th November, 1956.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. SENIOR HOUSE OFFICER in Anæsthetics required to start on 1st December, 1956. Appointment tenable in the first instance for period up to 30th April, 1957, and renewable thereafter. Terms and conditions of service for hospital medical staff apply.

Applications, giving full details of qualifications and previous posts held, together with 3 names for reference, should be sent to the Secretary to the Board, The General Infirmary, Leeds, 1, by 14th November, 1956.

LEEDS, 7. CHAPEL ALLERTON HOSPITAL. (229 Beds.) SURGICAL REGISTRAR required whole-time. National Health Service terms and conditions.

Detailed applications (4 copies), giving nationality, date of birth, qualifications, experience, present appointments and names of 3 referees, should reach the Secretary, Ministry of Health, Division 4(v), Norcross, Blackpool, Lancs., by 1st December, 1956.

LIVERPOOL. AINTREE HOSPITAL. Fazakerley Group OF HOSPITALS MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER (surgical). Applications are invited from registered medical practitioners. The Hospital is for the treatment of pulmonary and non-pulmonary tuberculosis, and is a main centre for thoracic surgery and has an Orthopædic Department. Salary will be in accordance with terms and conditions of service for hospital medical staff.

Applications, endorsed "Resident Senior House Officer," to be submitted immediately to the Physician-Superintendent.

LIVERPOOL. AINTREE HOSPITAL. Fazakerley Group OF HOSPITALS MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER (medical). Applications are invited from registered medical practitioners. The Hospital is for the treatment of pulmonary and non-pulmonary tuberculosis, and is a main centre for thoracic surgery and has an Orthopædic Department. Salary will be in accordance with terms and conditions of service for hospital medical staff.

Applications, endorsed "Resident Senior House Medical Officer," to be submitted immediately to the Physician-Superintendent.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ROYAL SOUTHERN HOSPITAL. Applications are invited for the post of Night CASUALTY OFFICER (House Officer grade) to take up duty as soon as possible for the period to 28th February, 1957. The post is normally resident.

Apply by 24th November, 1956, on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post of REGISTRAR in Radiology to take up duty as soon as possible for the period to 30th September, 1957.

Apply by 24th November, 1956, on form obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

MITCHAM. WILSON HOSPITAL, Cranmer-road, MITCHAM, SURREY. HOUSE PHYSICIAN (resident), not pre-registration, vacant 16th November.

Applications, stating age, qualifications, &c., with the names and addresses of 2 referees, to the Secretary at above address.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) 1 SENIOR HOUSE OFFICER (general surgery) required. Post vacant mid-November.

Application forms from Secretary.

MANCHESTER REGIONAL HOSPITAL BOARD and THE BOARD OF GOVERNORS OF THE UNITED MANCHESTER HOSPITALS. 4 whole-time non-resident posts of SENIOR HOUSE OFFICER status, commencing early March, 1957, tenable for 2 years. Facilities will be granted to attend the University course for the D.M.R.(D.) which the successful candidates must be prepared to take and of which details may be obtained from the Postgraduate Dean, Medical School, University of Manchester. Arrangements will be made for trainees to gain wide experience in all branches of radiodiagnosis in several hospitals, including the Teaching Hospital.

Applicants must fulfil the requirements of the Examining Board in England, 8–11, Queen-square, London, W.C.1, for the D.M.R.(D.) and must submit written evidence to that effect with their applications, which should be forwarded, with copies of 2 recent testimonials, to the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, by 7th December, 1956.

MANCHESTER. SPRINGFIELD HOSPITAL, Crumpsall, MANCHESTER, 8. SPRINGFIELD AND SWINTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for an additional appointment of PSYCHIATRIC REGISTRAR at this mental hospital of 750 Beds, where modern methods of investigation and treatment are carried out. The admission-rate is high—in the region of 900 per year; in addition, there are outpatient clinics at the Hospital. Facilities will be granted for attendance at the Course for the D.P.M. of the University of Manchester (with the Department of Psychiatry of which this Hospital is associated). Attendance at these lectures is not limited to those intending to take the Manchester examination. Accommodation is available for a single person; permission to live out may be granted. Terms and conditions of the National Health Service apply. Further particulars can be obtained from, and the Hospital may be visited by arrangement with, the Medical Superintendent.

Applications, giving details of age, experience, &c., together with the names of 3 referees, to be sent to the Medical Superintendent as soon as possible.

MANCHESTER. UNITED MANCHESTER HOSPITALS. ROYAL INFIRMARY AND ROYAL EYE HOSPITAL, MANCHESTER, 13.

5 HOUSE PHYSICIANS.
HOUSE PHYSICIAN for Department of Cardiology.
HOUSE PHYSICIAN for Department of Hæmatology.
8 HOUSE SURGEONS.
2 HOUSE SURGEONS for E.N.T. Department.
2 HOUSE SURGEONS for Neurosurgical Department.
3 HOUSE SURGEONS for Orthopædic Department.
HOUSE SURGEON for the Royal Eye Hospital.

Appointments are for 6 months from 15th and 22nd January, 1957, at the appropriate salaries for House Officers, with a deduction of £125 p.a. for residence.

Application form obtainable from the Secretary, Manchester Royal Infirmary, to be returned as soon as possible.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of REGISTRAR at the above Hospital. Whole-time post (non-resident). Tenable for 12 months, subject to renewal. Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications to be made as soon as possible on forms obtainable from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The post is recognised for the purpose of the M.R.C.O.G. examination. The appointment is for 6 months starting 1st January, 1957. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 24th November, 1956.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MACCLESFIELD HOSPITAL. (304 Beds.) Applications invited CLINICAL PATHOLOGIST (resident or non-resident). Senior House Officer grade. Post recognised for D.Path. equally suitable for those who later wish to do general medicine.

Apply, with names and addresses of 2 referees, to Group Secretary, Macclesfield and District Hospital Management Committee, "Willerby House," Cumberland-street, Macclesfield.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. Post vacant mid-December, 1956. There are 55 E.N.T. beds and 6 specialist operating sessions each week. Valuable experience is available, and the post is recognised for the purpose of the F.R.C.S. and the D.L.O. Salary will be £745 a year, less £150 a year for residential emoluments.

Applications to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Maidstone, Kent.

NEWCASTLE GENERAL HOSPITAL. (838 Beds). NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. Cardiology. SENIOR HOUSE OFFICER (resident) required in the Cardiovascular Department, Regional Unit, vacant November.

Applications, together with the names and addresses of 2 referees, should be sent to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4.

NEWCASTLE GENERAL HOSPITAL. (838 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. The resident (or non-resident) post of SENIOR HOUSE OFFICER (Casualty Department), tenable for 12 months, becomes vacant on 7th January, 1957. Recognised for F.R.C.S. Diploma.

Applications, together with names and addresses of 2 referees, should be sent to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4.

NEWMARKET GENERAL HOSPITAL Suffolk. Applications are invited for the post, now vacant, of SENIOR HOUSE OFFICER, for orthopædic and casualty duties. The post is resident.

Applications, giving age, nationality and qualifications, together with 3 recent testimonials, should be sent to the Medical Superintendent.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON for general surgery and urology, vacant 1st December, 1956. Recognised for the Final F.R.C.S. in general surgery, and recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 16th November, 1956.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN to the Radiotherapy Department, vacant 1st December, 1956. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 16th November, 1956.

NOTTINGHAM. CITY HOSPITAL. (811 Beds. Recognised for training for the D.A. and F.F.A.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) required. Appointment for 1 year in first instance.

Apply to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 19th November, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NOTTINGHAM GENERAL HOSPITAL. Resident preregistration or registered HOUSE SURGEON required. Duties to commence on 1st December.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. 2 Senior House OFFICERS (orthopædic and fracture) required, one mid-December, on 1st February. The posts offer exceptional experience in traumatic surgery.

Applications, stating age, qualifications and experience, nationality, &c., together with copies of testimonials, to be sent to Group Secretary.

OXFORD REGIONAL HOSPITAL BOARD. Anæsthetic REGISTRAR to the Swindon Group of hospitals. Duties will be mainly at the Victoria Hospital (96 Beds). The post is recognised for the D.A., and F.F.A.R.C.S., and provides good experience. Residential accommodation for a single person is available.

Applications on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 20th November, 1956.

OXFORD REGIONAL HOSPITAL BOARD. Wholetime REGISTRAR in Psychiatry, St. John's Hospital, Stone, near Aylesbury (770 Beds). Married or single accommodation, furnished or unfurnished, available. Appointment for 1 year, available for extension to a second year.

Application forms, obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should be returned by 19th November, 1956.

OXFORD REGIONAL HOSPITAL BOARD. Locum REGISTRAR (general surgery). Post vacant now. Duties mainly at Amersham and Stoke Mandeville Hospitals.

Applications to the Secretary, Registrar Committee, 43, Banbury-road, Oxford.

OXFORD. UNIVERSITY OF OXFORD AND UNITED OXFORD HOSPITALS. Applications are invited for the post of FIRST ASSISTANT (Senior Registrar) in the Department of Otolaryngology at the Radcliffe Infirmary. The appointment is full-time and duties lie mainly within the United Oxford Hospitals; but they carry honorary attachment at certain hospitals of the Regional Hospital Board in connection with visits made to those hospitals by Oxford Consultants. Candidates must hold the Diploma of Royal College of Surgeons and must have had satisfactory experiences in the specialty as Registrar.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received not later than 26th November, 1956.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for the post of REGISTRAR in the Department of Radiotherapy, Churchill Hospital, Oxford, commencing 1st January, 1957. May be resident or non-resident. Training includes clinical use of radioactive isotopes as well as other forms of radiotherapy. Recognised as training centre for D.M.R.T. Previous experience not essential.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received not later than 19th November, 1956.

ORPINGTON HOSPITAL, Orpington, Kent. House SURGEON (Male or Female) for orthopædics with some E.N.T. required. Post available from 1st December, 1956. Pre-registration candidates may apply.

Applications, with copies of 2 recent testimonials, to Physician-Superintendent by 21st November, 1956.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Queen Alexandra Hospital (87 surgical beds)

HOUSE SURGEON (pre-registration post), vacant 20th November, 1956.

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to E. H. HURST,

St. Mary's Hospital, Milton-road, Portsmouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. CENTRAL CASUALTY DEPARTMENT. SENIOR HOUSE OFFICER in Casualty, vacant 1st January, 1957. Recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

HOUSE SURGEON (pre-registration post), vacant 1st January, 1957. Recognised for the F.R.C.S. Freedom Fields Section.

HOUSE SURGEONS (pre-registration posts), vacancies 1st December, 1956, 10th and 18th January, 1957. Recognised for the F.R.C.S. Greenbank Road Section.

Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

POOLE GENERAL HOSPITAL Poole Dorset. BourneMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration) required for post becoming vacant on 26th December, 1956.

Applications to Hospital Secretary.

POOLE GENERAL HOSPITAL, Poole, Dorset. BourneMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE 2 HOUSE SURGEONS (pre-registration) required for 1st and 19th December. Posts recognised for F.R.C.S. and F.R.C.S.Ed.

Applications to Hospital Secretary.

PORT TALBOT GENERAL HOSPITAL, Hospital-road, PORT TALBOT. Applications are invited for the post of HOUSE SURGEON. Appointment available immediately.

Applications, giving full details of age, qualifications, experience, &c., and naming 2 referees, to be addressed to the Group Secretary of the Committee, Mid-Glamorgan Hospital Management Committee, 8, Wind-street, Neath.

PRESTON (near), LANCASHIRE. WHITTINGHAM HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER. Applications are invited for this post at the largest Mental Hospital in the country where all modern treatment is undertaken, including Electro-encephalography for the area. Facilities will be given for study either for the D.P.M. at Manchester University or for the M.R.C.P. at a large General Hospital a few miles away. The Hospital is well situated in a country district with easy access to Preston, Blackpool and Southport. Comfortable furnished or unfurnished flat can be arranged for a married man.

Applications, endorsed "Medical Officer," giving details of experience and names and addresses of 3 referees, to be addressed to The Medical Superintendent, Whittingham Hospital, near Preston, and be received as soon as possible.

READING. ROYAL BERKSHIRE HOSPITAL. (398 Beds.) Applications are invited from provisionally registered medical practitioners, Male and Female, for resident post of HOUSE SURGEON, vacant 1st December, 1956, and tenable for 6 months.

Write, before 16th November, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (339 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of a SENIOR HOUSE OFFICER (anæsthetics), vacant 1st January, 1957, for a period of 1 year. Post recognised for F.F.A.R.C.S. Salary £745 p.a., less £150 for board-residence.

Write, stating age, qualifications with dates, nationality and present post, together with the names of 3 referees, to the Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. Applications are invited from registered medical practitioners only for the post of RESIDENT ASSISTANT PATHOLOGIST vacant 6th December and tenable for 6 months. Salary £525 p.a.

Write, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (Area Accident and Orthopædic Department), vacant mid-December. Recognised for F.R.C.S. Duties including work in area Casualty Department at Battle Hospital, Reading (300 Beds). Person appointed will work with Registrar and House Officers.

Apply, stating nationality, present post and qualifications with dates, together with names of 2 referees, to Group Secretary, 3, Craven-road, Reading.

READING AREA DEPARTMENT OF MEDICINE. Applications are invited from registered and provisionally registered medical practitioners for 2 posts as RESIDENT HOUSE PHYSICIAN vacant on 1st December, 1956, for a period of 6 months. Successful applicants will be required to carry out duties at the following Reading Hospitals: Royal Berkshire (398 Beds), Battle (300 Beds) and Prospect Park (104 Beds).

Write, before 16th November, stating age, qualifications with dates, nationality, present post, with copy of a recent testimonial, to Secretary, Royal Berkshire Hospital, Reading.

READING. BATTLE HOSPITAL. (391 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT JUNIOR HOUSE SURGEON (orthopædic) in the Area Accident and Orthopædic Department. Post now vacant. F.R.C.S. recognised. Also casualty duties. Salary £425–£525 p.a., less £150 board-residence.

Apply, stating age, qualifications with dates, nationality, present post, with 1 copy of recent testimonial, to Hospital Secretary.

RETFORD, NOTTINGHAMSHIRE. RAMPTON HOSPITAL. (1143 Beds for mental defectives of both sexes exhibiting conduct disorders.) SENIOR REGISTRAR. Excellent opportunities for study of psychopath behaviour and for research. Psychiatric experience essential; D.P.M. or Part I thereof desirable. Modern house available. Candidates may visit Hospital by appointment.

Applications, naming 3 referees, to Medical Superintendent by 1st December, 1956.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade) in the Department of Pathology of the Rochdale Group of hospitals. The duties will consist mainly of clinical pathology, also general and emergency work and supervision of the blood banks. Previous pathology experience is not essential.

Applications, giving usual particulars and names and addresses of 2 referees, to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs, at once.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (622 Beds.) Applications are invited from pre-registration candidates for a 6 months appointment of HOUSE SURGEON (recognised for F.R.C.S.) at the above Hospital. Post vacant 1st December, 1956.

Applications, &c., accompanied by 1 testimonial, to reach the undersigned by 21st November, 1956.

J. C. FIELD, Secretary.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of RESIDENT HOUSE SURGEON/HOUSE PHYSICIAN to run consecutively in this order from 1st January, 1957, for a period of 6 months in each post. The post is open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of RESIDENT HOUSE SURGEON to the Obstetric and Gynæcological Department which becomes vacant on 1st January, 1957. The post is open to pre-registration candidates and is recognised for the Diploma and Membership of the Royal College.

Apply, enclosing names of 2 recent referees, and stating age, nationality, qualifications and experience, to the Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, by 17th November, 1956.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance:—

REGISTRAR in Pathology based at the Royal Infirmary, Glasgow, for duties on a rotational basis at the Royal Maternity Hospital, Glasgow.

REGISTRAR in Surgery based at the Royal Alexandra Infirmary, Paisley.

REGISTRAR in E.N.T. Surgery based at the Royal Infirmary, Glasgow, for duties at Law Hospital, Carluke.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 24th November, 1956.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. ARBROATH INFIRMARY. General Surgery. Applications are invited for the post of REGISTRAR in General Surgery at Arbroath Infirmary (105 Beds—40 general surgical). Modern house available to rent if required. Salary and conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 24th November, 1956.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Pædiatrics. DUNDEE GENERAL HOSPITALS. Applications are invited for the post of SENIOR REGISTRAR in Pædiatrics in the Professorial Units at Dundee Royal Infirmary (534 Beds) and Maryfield Hospital, Dundee (370 Beds), the main teaching hospitals associated with the University of St. Andrews. The duties will include teaching of undergraduates. Salary and conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 17th November, 1956.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Radiotherapy at the Royal Infirmary and the Western General Hospital, Edinburgh.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be sent to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 1st December.

SHEFFIELD. CITY GENERAL HOSPITAL. Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR required in the Regional Cardiovascular Department at the above Hospital—a large general hospital having teaching affiliations with the University of Sheffield, a Professorial Medical Unit and a Department of Thoracic Surgery. Some knowledge of practical cardiology desirable. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 19th November, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL HOSPITAL UNIT. Applications invited for the post of RESIDENT SENIOR HOUSE OFFICER in Clinical Pathology at the above Hospital. Post vacant 1st January, 1957. Pathological experience not essential. The successful candidate will work in turn in the different branches of clinical pathology in the laboratories of The United Sheffield Hospitals.

Applications, stating age, qualifications and experience, with the names of 3 referees, should be sent immediately to the Superintendent, Royal Hospital, West-street, Sheffield, 1.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) RESIDENT ANÆSTHETIST (Senior House Officer). Post recognised for F.F.A.R.C.S. Registrar also employed. Vacant 1st January, 1957.

Applications and copy testimonials to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SKIPTON (near). GRASSINGTON HOSPITAL. (206 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER required for the above Hospital, which provides treatment for tuberculosis patients, men and women. Accommodation available for single applicants.

Applications to Medical Superintendent.

SKIPTON (near). GRASSINGTON HOSPITAL. (206 Beds.) SENIOR HOUSE OFFICER required for the above Hospital, which provides treatment for tuberculosis patients, men and women. Accommodation available for single applicants.

Applications to Medical Superintendent.

ST. ALBANS (near). HARPERBURY HOSPITAL, Harper-lane, SHENLEY, near ST. ALBANS, HERTS. JUNIOR HOSPITAL MEDICAL OFFICER required. Salary scale as laid down by Whitley Council, £775 p.a.–£50–£1075 p.a. Harperbury Hospital is a modern hospital of 1624 Beds for mentally defective patients of both sexes and all grades. The Hospital is situated 5 miles from St. Albans and may be visited by arrangement.

Applications, with full details and 1 recent testimonial and the names and addresses of 2 referees, to be sent to the Medical Superintendent, within 10 days of the appearance of this advertisement.

ST. ALBANS (near), HERTFORDSHIRE. NAPSBURY MENTAL HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER (full-time) required. 3 years tenure. Some experience of psychiatry desirable. Single accommodation available.

Apply to Medical Superintendent by 20th November, 1956.

ST. ALBANS CITY HOSPITAL. (384 Beds.) **North WEST METROPOLITAN REGIONAL HOSPITAL BOARD.** CASUALTY OFFICER (Registrar grade) required. Post recognised for the F.R.C.S. regulations, and preference will be given to such candidates. Appointment tenable for 6 months from middle of December, 1956, approximately, and subject to review at end of this period.

Application forms obtainable from, and returnable to, Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, Herts, by 19th November, 1956.

STOKE-ON-TRENT. BUCKNALL HOSPITAL. (58 infectious, 20 pneumoconiosis, 124 chronic sick beds.) Applications invited for post of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER. Married accommodation available. The person appointed will be associated with all 3 departments of the Hospital and will be required to assist at the pneumoconiosis clinic.

Applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE PHYSICIAN (general medicine) with pædiatrics. Pre-registration post.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

SWANSEA. MOUNT PLEASANT HOSPITAL. (236 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics and for the Maternity Unit of 40 Beds at the above Hospital. The post, which will become vacant on 1st February, 1957, is for a period of 12 months, and is recognised for the D.Obst.R.C.O.G. examination.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, should be sent to the Hospital Secretary not later than 30th November, 1956.

T. E. JONES, Group Secretary.

SOUTH SOMERSET CLINICAL AREA. The Board of GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards for the joint appointment of SENIOR REGISTRAR in Psychiatry. The appointment will be held for 1 year in the first instance but may be renewed thereafter on an annual basis. The successful candidate will be appointed to work for the first year mainly at Tone Vale Hospital, near Taunton, which provides treatment in all types of psychiatric cases including psychotic children, and all forms of modern treatment; also attendance at outpatient psychiatric clinics and work in the Electro-encephalographic Department. He will also be required to visit other hospitals in the Clinical Area as determined by the Regional Board from time to time. A flat suitable for a married man or single quarters will be available in the Hospital.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 24th November, 1956.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD. (Joint appointment with the United Bristol Hospitals.) Applications are invited by the above Boards for the joint appointment of REGISTRAR in Dental Surgery. This post becomes vacant on 10th January, 1957. The successful candidate will be appointed for 1 year in the first instance to work in the Maxillo-Facial Unit at Frenchay Hospital and in the University of Bristol Dental Hospital. He may also be required to perform duties in other hospitals in the Teaching Hospital Group.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 24th November, 1956.

SOUTHEND GENERAL HOSPITAL. Applications are invited from registered or provisionally registered practitioners for 2 RESIDENT HOUSE SURGEON appointments. Both posts vacant 12th December, 1956. Salary according to previous appointments held, less prescribed charge for residential emoluments.

Applications, stating age, qualifications and previous experience, with copies of recent testimonials (1 testimonial sufficient from applicants for first appointment) to reach the undersigned by 21st November, 1956. J. C. FIELD, Secretary.

SOUTHEND GENERAL HOSPITAL. Applications are invited for appointment as HOUSE PHYSICIAN (pre-registration), post vacant 1st December, 1956.

Applications, stating age, qualifications and previous experience with copies of recent testimonials (1 testimonial sufficient from applicant for first appointment), to reach the undersigned by 16th November, 1956. J. C. FIELD, Secretary.

SOUTHPORT GENERAL INFIRMARY. (Recognised for F.R.C.S. and pre-registration.)

HOUSE SURGEON (surgery and gynæcology), vacant about December.

HOUSE SURGEON (surgery and ophthalmology), vacant January, 1957.

Apply, stating age, qualifications, nationality, experience, and enclosing 2 copy testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

STOCKPORT. STEPPING HILL HOSPITAL. (535 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgery), vacant 16th December, 1956. The post is recognised for the F.R.C.S.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Group Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. SENIOR HOUSE OFFICER to Department of Pathology required for post vacant 18th December. Post offers scope for participation in routine work of all sections of department and in research undertaken by Special Unit for Juvenile Rheumatism.

Applications, giving age, qualifications and experience, with copies of 3 recent testimonials, to Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. RESIDENT MEDICAL REGISTRAR required at above Hospital.

Application forms from, and returnable to, Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 18th November.

WORCESTER ROYAL INFIRMARY. (213 Beds.) Senior HOUSE OFFICER (surgical) required for post which is Deputy to Surgical Registrar and offers good experience. Recognised for F.R.C.S. examinations.

Applications, with 2 names for reference, to the Secretary.

TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. 2 SENIOR HOUSE OFFICERS (anæsthetics) required for the Tees-side Group of hospitals. The Group is recognised for the F.F.A.R.C.S. and D.A. Facilities are available for postgraduate study and emergency work is by rota.

Applications, with copies of 3 testimonials, to—

Dr. J. G. WARNOCK,

North Ormesby Hospital, Middlesbrough.

WALTHAM ABBEY. HONEY LANE HOSPITAL. Junior HOSPITAL MEDICAL OFFICER as senior resident in modern hospital of 116 Beds, situated in pleasant rural surroundings, with responsibility for day-to-day care of tuberculosis and infectious diseases wards. Relief duties on medical wards. Modern house with garage available for married man, or comfortable resident quarters if single. Previous experience considered with view to possibility of accelerated increments above normal starting point on salary scale.

Apply, with 2 names for reference, to Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex, by 16th November, 1956.

WAKEFIELD. STANLEY ROYD HOSPITAL. Appli-cations invited for post of JUNIOR HOSPITAL MEDICAL OFFICER in Psychiatry. Salary scale £775–£50–£1075. Married accommodation may be available.

Address written applications, giving full personal particulars, details of training, experience, &c., together with 2 names and addresses for reference, to W. BOWRING, Group Secretary.

Victoria Chambers, Wood-street, Wakefield.

WATFORD PEACE MEMORIAL AND SHRODELLS HOSPITALS, WATFORD. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR required at the above Hospitals. Post recognised for F.R.C.S. Post vacant immediately. Hospitals may be visited by direct appointment.

Application form obtainable from, and returnable to, the Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Herts, by not later than 10 days after appearance of this advertisement.

WOODFORD GREEN, ESSEX. HARTS HOSPITAL. (100 Beds.) SENIOR HOUSE OFFICER required. Post vacant 1st December, 1956. The Hospital is a modern sanatorium with a Thoracic Surgical Unit and Area Chest Clinic. The post offers exceptional opportunity for gaining experience in tuberculosis and diseases of the chest. Accommodation for single person only. Salary £745 p.a., less £150 p.a. for board, lodging, &c.

Applications, with copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WIGAN AND LEIGH GROUP OF HOSPITALS. Registrar in Chest Diseases to the above Group. 2 busy chest clinics and opportunity to gain experience in Thoracic Surgical Unit.

Applications, with names of 2 referees, to Secretary, Knowsley House, Wigan.

WIGAN (near). BILLINGE HOSPITAL, Orrell, near WIGAN. (375 Beds.) SENIOR HOUSE OFFICER in General Surgery required for duty at above Hospital. Post vacant 1st January, 1957.

Applications, with names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

WOLVERHAMPTON GROUP.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

Pre-registration HOUSE OFFICER in Medicine. Post vacant 12th December, 1956.

Applications, with copies of testimonials, to Secretary.

WEST DORSET GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. PATHOLOGICAL REGISTRAR (preferably resident) required. General laboratory and emergency duties, with training in all branches. Some laboratory experience essential. Salary on Registrar grade, less £170 p.a. if resident. The Laboratory is modern and well equipped and a P.H.L.S. Unit is housed in the same building, so that a wide experience is available. Candidates may visit by appointment.

Application form, returnable by 17th November, 1956, from Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens REGISTRAR in Thoracic Medicine required Llangwyfan Hospital immediately for approximately 4 months.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

WELSH REGIONAL HOSPITAL BOARD. Registrar in General Medicine, to serve Newport and East Monmouthshire Hospital Management Committee. Based Royal Gwent Hospital, Newport (260 Beds). Expected serve other hospitals in Group. Non-resident. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD/UNITED CARDIFF HOSPITALS. REGISTRAR in Radiotherapy, Whitchurch Hospital, Whitchurch, Glam. Duties will include visits to United Cardiff Hospitals. Non-resident.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD. Registrar (E.N.T. surgery), based Neath General Hospital, Neath, with visits to other hospitals in area. Resident/non-resident. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL BUREAU FOR PRE-REGISTRATION HOSPITAL APPOINTMENTS. It is anticipated that the following Pre-registration HOUSE OFFICER posts at the undermentioned hospitals in the Welsh Region will be vacant on the dates given. These posts have been approved by the Licensing Body for the employment of medical students who, after passing their qualifying examinations, are required to spend a prescribed period in approved hospitals before they become eligible for full registration as medical practitioners.

Forms of application may be obtained from the Regional Bureau, Welsh National School of Medicine, 34, Newport-road, Cardiff, Wales, and should be returned by 5th December, 1956.

Newport and East Monmouthshire

ROYAL GWENT, NEWPORT, MON. (260 Beds)
2 medical—1st February, 1957.
3 surgical—1st February, 1957.
1 gynæcology (surgical)—1st February, 1957.

ST. WOOLOS, NEWPORT, MON. (379 Beds)
2 medical—1st February, 1957.
1 surgical—1st February, 1957.
1 pædiatric (medical)—1st February, 1957. Post recognised for D.C.H.

PONTYPOOL AND DISTRICT, PONTYPOOL, MON. (126 Beds)
1 medical—1st February, 1957.
2 surgical—1st February, 1957.

Rhymney and Sirhowy Valleys

CAERPHILLY & DISTRICT MINERS', CAERPHILLY, GLAM. (170Beds)
1 medical—1st February, 1957.
1 surgical—1st February, 1957.
1 midwifery—1st February, 1957.

TREDEGAR GENERAL, TREDEGAR, MON. (56 Beds)
1 surgical—5th February, 1957.

ST. JAMES, TREDEGAR, MON. (156 Beds)
1 medical—5th February, 1957.
1 midwifery—1st February, 1957.

Cardiff

ST. DAVID'S, CARDIFF, GLAM. (590 Beds)
3 medical—1st February, 1957.
1 orthopædic (surgical)—1st February, 1957.
1 midwifery—1st February, 1957.
1 pædiatric (medical)—1st February, 1957.

Merthyr and Aberdare

MERTHYR GENERAL, MERTHYR TYDFIL, GLAM. (120 Beds)
1 medical—1st February, 1957.
1 surgical—1st February, 1957.

ST. TYDFIL'S, MERTHYR TYDFIL, GLAM. (375 Beds)
1 medical—1st February, 1957.
1 surgical—1st February, 1957.

Pontypridd and Rhondda

EAST GLAMORGAN, CHURCH VILLAGE, nr. PONTYPRIDD (316 Beds)
2 medical—1st February, 1957.
2 surgical—1st February, 1957.
2 orthopædic (surgical)—1st February, 1957.
2 midwifery—1st February, 1957.
1 pædiatric (medical)—1st February, 1957.

Mid Glamorgan

BRIDGEND GENERAL, BRIDGEND, GLAM. (381 Beds)
2 medical—1st February, 1957.
2 surgical—1st February, 1957.
1 midwifery—1st February, 1957.

NEATH GENERAL, NEATH, GLAM. (412 Beds)
2 medical—1st February, 1957.
2 surgical—1st February, 1957.
1 midwifery—1st February, 1957.

Glantawe

SWANSEA GENERAL, SWANSEA, GLAM. (403 Beds)
2 medical—1st February, 1957.
2 surgical—1st February, 1957.

MORRISTON HOSPITAL, near SWANSEA, GLAM. (501 Beds)
2 medical—1st February, 1957.
2 surgical—1st February, 1957.
1 pædiatric (medical)—1st February, 1957.
1 orthopædic (surgical)—1st February, 1957.

West Wales

WEST WALES GENERAL, CARMARTHEN (188 Beds)
1 medical—8th February, 1957.
1 surgical—8th February, 1957.

PEMBROKE COUNTY WAR MEM., HAVERFORDWEST (163 Beds)
1 medical—1st February, 1957.
1 surgical—1st February, 1957.

Mid Wales

ABERYSTWYTH GENERAL, ABERYSTWYTH, CARDS. (81 Beds)
1 medical—1st February, 1957.
1 surgical—1st February, 1957.

Caernarvon and Anglesey

CAERNARVON & ANGLESEY GENERAL, BANGOR, CAERNS. (130 Beds)
2 medical—1st February, 1957.
2 surgical—1st February, 1957.

LLANDUDNO GENERAL, LLANDUDNO, CAERNS. (134 Beds)
1 medical—1st February, 1957.
2 surgical—1st February, 1957.

ST. DAVID'S, BANGOR (136 Beds)
1 midwifery—1st February, 1957.

Clwyd and Deeside

ROYAL ALEXANDRA, RHYL, FLINTS. (138 Beds)
1 medical—1st February, 1957.
1 surgical—1st February, 1957.

ST. ASAPH GENERAL, ST. ASAPH, FLINTS. (208 Beds)
1 midwifery—12th February, 1957.

Wrexham, Powys and Mawddach

MAELOR GENERAL, WREXHAM, DENBS. (591 Beds)
1 medical—1st February, 1957.
3 surgical—1st February, 1957.
1 pædiatric (medical)—1st February, 1957.

WREXHAM WAR MEMORIAL, WREXHAM, DENBS. (230 Beds)
1 medical—1st February, 1957.
1 surgical—1st February, 1957.
1 orthopædic (surgical)—1st February, 1957.

YORK COUNTY HOSPITAL. (General Hospital of 269 Beds with full Consultant staff.) CASUALTY OFFICER (with charge of orthopædic beds) required 10th December, 1956. Junior Hospital Medical Officer grade. Salary £775–£50–£1075 p.a., less £170 p.a. if resident. Recognised for F.R.C.S.

Applications, giving age, nationality, qualifications, experience and names of 2 referees, immediately to Group Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

B.W.I. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES. Applications are invited for the post of REGISTRAR in the Department of Anæsthetics at the above-named Teaching Hospital which is in special relationship with the University of London. Higher qualifications desirable but not essential. The successful candidate will be required to commence duties as early as possible. The appointment will be for 1 year in the first instance, subject to renewal. Salary is payable within the scale £900–£100–£1100 : £1200–£100–£1500 p.a., depending on experience and qualifications. Single accommodation and board are provided at a deduction of £145 p.a., or, if available, unfurnished accommodation at 5% of salary. Return passage by sea will be paid for 1 person only.

Further information may be obtained from the Hospital Manager and Secretary, University College Hospital, Mona P.O. Jamaica, B.W.I., to whom applications, stating age, nationality and details of qualifications and experience, together with the names and addresses of 3 referees, should be sent by 24th November, 1956.

CANADA. KINGSTON GENERAL HOSPITAL, Kingston, ONTARIO. Canadian Teaching Hospital associated with Queen's University Faculty of Medicine, offers 12-month ROTATING INTERNESHIPS commencing 1st July, 1957. Honorarium $100 per month plus residential emoluments.

Apply to the Superintendent.

ST. JOHN'S, NEWFOUNDLAND, CANADA. GENERAL HOSPITAL. (475 Beds.) DEPARTMENT OF PATHOLOGY. Applications are invited for the post of RESIDENT REGISTRAR in Pathology at the above Hospital. Work will include clinical, surgical and autopsy pathology. Previous experience in pathology desirable but not essential. The post is recognised for post-graduate training and towards Certification in Pathology by the Royal College of Surgeons and Physicians of Canada. Excellent opportunities exist for gaining extensive experience. Salary $3200 p.a. less $480 for maintenance, &c., if living in. Transport to St. John's will be paid by the Hospital and also return fare to the United Kingdom on completion of 1 years satisfactory service.

Applications, with full details, &c., to be forwarded to—
Dr. E. WILSON, Superintendent.
General Hospital, St. John's, Newfoundland, Canada.

U.S.A. TOLEDO HOSPITAL, 2142, North Cove-boulevard, TOLEDO, OHIO. INTERNS-ROTATING SERVICE of 12 months starting 1st July, 1957. Fully approved 450-Bed Hospital. Excellent training in various fields of medicine. Great Lakes Port City. Full maintenance for Interns. Apartments provided for families. Stipend $200 per month.

Write to Superintendent.

U.S.A. AMERICAN INTERNSHIP. Rotating internship, general hospital, A.M.A. approved, 250 Beds. Municipal hospital in city adjoining Boston, Massachusetts. Salary $137.50 per month, including room and board. Excellent living-quarters.

Replies to Dr. JOSEPH P. LEONE, Director Quincy City Hospital, 114, Whitwell-street, Quincy 69, Massachusetts, U.S.A.

Public Appointments

DEPARTMENT OF HEALTH FOR SCOTLAND. REGIONAL MEDICAL OFFICER. The Civil Service Commissioners invite applications from Men and Women for a pensionable post. Headquarters in Glasgow. Candidates must be registered medical practitioners of at least 10 years standing, with wide experience of general practice. Higher qualifications and extra diplomas in special branches of medicine are desirable. Interviews in Edinburgh, in December. Salary £1600 at age 35 (lower for those under 35) to £2000 at 40. Exceptionally, a candidate age 40 or over on entry may receive starting pay above £2000, according to qualifications and experience. Scale maximum £2200. Promotion prospects. 5-day week in general. Non-contributory pension and gratuity.

Further information on this and other posts and application form from Secretary, Civil Service Commission, 6, Burlington-gardens, London, W.1, quoting No. 537/56/7. Application forms to be returned by 27th November, 1956.

DERBYSHIRE COUNTY COUNCIL. County Health DEPARTMENT. SENIOR MEDICAL OFFICER for Mental Health. Applications are invited from registered medical practitioners for this whole-time superannuable post. Experience in dealing with educationally subnormal children and mental defectives is necessary for carrying out the duties. The possession of a Diploma in Public Health or in Psychological Medicine would be regarded as an important additional qualification. Salary £1520–£50 (1) and £55 (7)–£1955 p.a. Car allowance.

Particulars and application forms obtainable from Dr. J. B. S. MORGAN, County Medical Officer, St. Mary's Gate, Derby, to whom they should be returned by 26th November, 1956.

DUBLIN. LOCAL APPOINTMENTS COMMISSION. Vacancies for ANÆSTHETISTS. Anæsthetist (*a*) Waterford Board of Public Assistance, (*b*) Clare County Council. Essential qualifications include (*a*) a recognised Diploma in Anæsthetics or equivalent, and (*b*) adequate experience in the administration of anæsthetics. The posts are part-time. Basic salary £809. Additional payment for attendance exceeding 15 hours a week.

Application forms and particulars from the Secretary, Local Appointments Commission, 45, Upper O'Connell-street, Dublin. Latest time for receiving completed application forms 5 P.M. on 23rd November, 1956.

EAST SUFFOLK COUNTY COUNCIL. Applications are invited for appointment of ASSISTANT COUNTY MEDICAL OFFICER (29/44ths) AND MEDICAL OFFICER OF HEALTH (15/44ths) for the Borough of Beccles, the Bungay, Halesworth and Leiston Urban Districts, and the Blyth and Wainford Rural Districts (total population approximately 43,000). Salary, based on current awards, will be between the minimum £1408 and the maximum £1800 p.a., rising to maximum by appropriate increments in accordance with the awards. Duties will include school medical inspection, maternity and child welfare work and general public health. D.P.H. essential and previous local authority experience an advantage. Superannuable appointment, subject to satisfactory medical examination, and to provisions of Sanitary Officers (outside London) Regulations, 1935. Car allowance on approved national scales.

Forms of application and further information obtainable from the County Medical Officer, County Hall, Ipswich, to whom all applications should be returned not later than 24th November, 1956.

G. C. LIGHTFOOT, Clerk of the County Council.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointment as Appointed Factory Doctor is vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
SILLOTH ..	CUMBERLAND ..	24TH NOVEMBER, 1956

OLDHAM. COUNTY BOROUGH OF OLDHAM. Applications are invited from registered medical practitioners for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH AND ASSISTANT SCHOOL MEDICAL OFFICER, which affords an excellent opportunity for obtaining experience in the Public Health and School Health Services. Salary £1050–£50–£1200–£55–£1475 p.a. The point of entry will be fixed according to qualifications and experience. The appointment is superannuable and subject to medical examination.

Applications, stating age, qualifications and experience should be forwarded to the Medical Officer of Health, Public Health Department, Town Hall, Oldham, together with copies of 2 testimonials, or the names of 2 persons to whom reference may be made. EDWARD HAINES, Town Clerk.

GLOUCESTERSHIRE COUNTY COUNCIL. Applications are invited for the appointment of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. Salary £1050 p.a.–£1475 p.a. Commencing salary will be determined on previous experience. Applicants must be registered medical practitioners and possession of a Diploma or Certificate in Public Health would be an advantage. Superannuable post: medical examination. Car driver and should possess a motor-car.

Forms of application, with conditions, obtainable from County Medical Officer of Health, Berkeley House, Berkeley-street, Gloucester, to whom completed applications should be sent by 24th November, 1956. Canvassing disqualifies.

GUY H. DAVIS, Clerk of the County Council.

HERTFORDSHIRE COUNTY COUNCIL. Tewin Water RESIDENTIAL SCHOOL FOR PARTIALLY DEAF. CONSULTANT OTOLOGIST. Applications are invited from Otologists with appropriate qualifications and experience who are prepared to interest themselves in both the clinical and educational problems of the partially deaf and for this purpose, to visit this School at least once each term. A fee of 30 guineas and travelling and subsistence allowances on the appropriate scale will be paid annually.

Further particulars from County Medical Officer, County Hall, Hertford.

MINISTRY OF PENSIONS AND NATIONAL INSURANCE. MEDICAL OFFICERS. The Civil Service Commissioners invite applications for 6 pensionable posts (Regions and Central Office, Blackpool) for Men and Women aged 28 or more on 1st October, 1956. Interviews in London, in December. Candidates must be registered medical practitioners and must have had good clinical experience. Experience in medical boarding or occupational health an advantage. In the Ministry of Pensions and National Insurance the work is mainly concerned with claims for war pensions and disablement benefit under the National Insurance (Industrial Injuries) Act. Starting salary (London) from £1650 at age 35 (lower for those under 35) to £2050 at 40. Exceptionally, a candidate age 40 or over on entry may receive starting pay above £2050 according to qualifications and experience. Scale maximum £2250. Somewhat lower outside London. Promotion prospects. Non-contributory pension and gratuity. 5-day week in general.

Further information on these and other posts and application form from Secretary, Civil Service Commission, 6, Burlington-gardens, London, W.1, quoting No. 537/56/7. Application forms to be returned by 27th November, 1956.

MINISTRY OF EDUCATION. Medical Officer. The Civil Service Commissioners invite applications from Men and Women aged 28 or more on 1st October, 1956, for this pensionable post in London. Interviews in December. Candidates must be registered medical practitioners and have had wide experience in paediatrics including the School Health Service. Experience in the Public Health Service an advantage. A higher medical qualification is desirable. The work includes inspecting and reporting on the School Health service and local education authorities' arrangements for handicapped children; advising and acting as the representative of the Ministry. Starting salary (London) from £1650 at age 35 (lower for those under 35) to £2050 at 40. Exceptionally, a candidate age 40 or over on entry may receive starting pay above £2050 according to qualifications and experience. Scale maximum £2250. Promotion prospects. Non-contributory pension and gratuity. 5-day week in general.

Further information on this and other posts and application form from Secretary, Civil Service Commission, 6, Burlington-gardens, London, W.1, quoting No. 537/56/7. Application forms to be returned by 27th November, 1956.

GOLD COAST LOCAL CIVIL SERVICE. Ministry of HEALTH. SPECIALIST OPHTHALMOLOGISTS required by Gold Coast Government to operate ophthalmological units in major hospitals and to study diseases of the eye in the field as and when required. Candidates must be registered medical practitioners holding either a Fellowship of 1 of the Royal Colleges of Surgeons (or F.R.F.P.S.), or a Diploma in Ophthalmology, and must have had not less than 4 years approved full-time hospital experience in eye diseases, preferably under the direction of a fully qualified Specialist, after hospital experience in House posts. Appointments would be to Gold Coast Civil Service on contract for 2 tours of duty of from 18 to 24 months each in the first instance with gratuity on satisfactory completion of service. Basic salary scale £2400–£2700 a year. Gratuity (taxable) of £12 10s. for each completed month of service. Candidates in National Health Service may leave but retain superannuation rights (up to maximum of 6 years). Salary in this case would be £1900–£2200 a year, and gratuity 20% of aggregate of salary. Temporary addition of £29 15s. a year also payable. Starting point in both salary scales determined according to qualifications and experience. Quarters when available at rental not exceeding £150; income-tax at local rates; free passages for Officer, wife, and up to 3 children under 13 years of age. Generous home leave.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD.117/13/03).

NOTTINGHAMSHIRE COUNTY COUNCIL. Applications are invited for the appointment of SENIOR ADMINISTRATIVE MEDICAL OFFICER (Male) from duly qualified and registered medical practitioners who hold a Diploma in Public Health. The post is third in seniority in the Department which is responsible for the central administration of the Public Health and School Health Services of the County. Applicants should have had clinical and administrative experience in general public health work and in connection with the School Health Service. Experience of County work, though not essential, will be an advantage. Salary £1570 p.a.–£50–£1620 p.a.–£55 p.a.–£2055 p.a. Within this scale the County Council are prepared to take into consideration the existing salary and circumstances of the successful candidate in assessing his commencing salary.

Application forms and conditions of appointment are obtainable from me, and completed applications must be returned by 8th December, 1956.

A. R. DAVIS, Clerk of the County Council.

Shire Hall, Nottingham.

HASTINGS. COUNTY BOROUGH OF HASTINGS. Applications are invited from duly qualified medical practitioners for the whole-time appointment of DEPUTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER at a salary of £1305 p.a., rising by 4 annual increments of £55 to £1525 p.a. The successful applicant may be appointed at any point in the scale according to experience and length of service. At present an additional salary of approximately £120 p.a. is payable in respect of duties at the Infectious Diseases Hospital, if the candidate is approved for this purpose, and certain fees as Deputy Medical Referee to Hastings Crematorium. A car allowance of £120 p.a. will be given for use of own car. Applicants must possess the Diploma in Public Health or an equivalent qualification, and should be approved in connection with the ascertainment of educationally subnormal children. The appointment, which will be subject to the provisions of the Local Government Superannuation Act, 1937, and, if necessary, to the passing of a medical examination, is terminable by 2 months notice on either side.

Forms of application, and conditions of appointment, may be obtained from the Medical Officer of Health, 44, Wellington-square, Hastings, and applications, together with copies of 3 references should be returned to him not later than 24th November, 1956. Canvassing will be a disqualification

N. P. LESTER, Town Clerk, Hastings.

HER MAJESTY'S OVERSEA SERVICE. Federation of NIGERIA. MEDICAL OFFICER (Special grade) (Mental Health) required to undertake investigations on mental illness, to examine and treat institutionally or otherwise, persons suffering from mental illness, and to advise Government on matters connected with Mental Health with particular reference to organisation and expansion of Mental Health Services, training of staff and legislation. Candidates must possess medical qualifications registrable in United Kingdom and D.P.M. or equivalent qualification.

Appointment may be made:—

(*a*) On 3 years probation for permanent and pensionable employment. Pensions (non-contributory) of 1/600th of final pensionable emoluments for each completed month of reckonable service.

(*b*) From National Health Service. Candidates may leave National Health Service but retain superannuation rights up to 6 years and receive gratuity (taxable) of 20% of aggregate of their salary.

Salary including inducement addition for officer appointed under (*a*) and (*b*) ranges from £1326 to £1950 p.a.

(*c*) On short-term contract (2 tours of 18–24 months) with inclusive salary from £1526 to £2286 p.a. On completion of contract gratuity (taxable) is paid of £37 10s. for each completed period of 3 months service (including leave).

Officer appointed under (*a*) or (*c*) is required to contribute to a Widows' and Orphans' Pension Scheme.

Quarters at low rental. Free return passages for Officer and wife. Return passages for children, to age 18, provided cost does not exceed that of 2 adult return passages in any 1 tour of service. Children's (separate domicile) allowance of £75 a year for each child under 18 ceasing if children join parents in Nigeria. Income-tax at local rates. Local leave permissible and generous home leave after each tour.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD.117/14/050).

HER MAJESTY'S OVERSEA SERVICE. Medical Branch —TRINIDAD. RADIOLOGIST required to carry out radiological diagnosis, X-ray and other specialised duties as required. Appointment on permanent basis with pension (non-contributory) or on short-term contract with gratuity (taxable) of £37 10s. for each 3 months service (including leave). Pension 1/600th of final pensionable emoluments for each completed month of service. Salary scale $8160–$8640 (£1700–£1800) a year, which includes $960 (£200) non-pensionable allowance in lieu of private and consulting practice. Candidates in the National Health Service may leave but retain their superannuation rights up to 6 years and receive gratuities (taxable) of 20% of the aggregate of their salaries. Quarters not provided; but allowance in lieu payable to Officer recruited from outside territory. Free passages on appointment for Officer and family, not exceeding 5 persons in all, and on leave subject to a maximum of 3 adult fares. Income-tax at local rates. Tour of service 3 years. Local leave permissible and generous home leave granted after each tour. Education facilities available. Candidates must possess medical qualifications registrable in United Kingdom and a Diploma in Medical Radiology, or equivalent recognised qualification, and have had suitable experience in a recognised hospital in radiodiagnosis and radiotherapy.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD.117/38/010).

HER MAJESTY'S OVERSEA SERVICE. Federation of NIGERIA. MEDICAL OFFICERS with qualifications registrable in United Kingdom required to undertake clinical work of curative medicine in general hospitals, dispensaries or rural units, and administration of preventive medicine in relation to that work. Officers appointed may be required to carry out general duties of Medical and Health Officers and other duties in connection with epidemic diseases.

Appointments may be made :—

(*a*) On 3 years probation for permanent and pensionable employment. Pensions (non-contributory) of 1/600th of final pensionable emoluments for each completed month of reckonable service.

(*b*) From National Health Service. Candidates may leave National Health Service but retain superannuation rights up to 6 years and receive gratuity (taxable) of 20% of aggregate of their salary.

Salary including inducement addition for officers appointed under (*a*) and (*b*) ranges from £1128 to £1950 p.a.

(*c*) On short-term contract (2 tours of 18–24 months) with inclusive salary from £1338 to £2286 p.a.

On completion of contract a gratuity (taxable) is paid at £37 10s. for each completed period of 3 months service (including leave). Officers appointed under (*a*) or (*c*) are required to contribute to a Widows' and Orphans' Pension Scheme.

Quarters at low rental. Free return passages for Officer and wife. Return passages for children, to age 18, provided cost does not exceed that of 2 adult return passages in any 1 tour of service. Children's (separate domicile) allowance of £75 a year for each child under 18, ceasing if children join parents in Nigeria. Income-tax at local rates. Local leave permissible and generous home leave after each tour.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD.117/14/01).

HER MAJESTY'S OVERSEA SERVICE. Federation of NIGERIA. MEDICAL OFFICER (tuberculosis) required to undertake mainly general duties in tuberculosis control and treatment and possibly research and survey as may be assigned to him by the Chief Medical Adviser to the Federal Government of Nigeria. Candidates must have not less than 6 months post-registration experience in a Tuberculosis Institution. T.D.D. desirable but not essential.

Appointment may be made :—

(*a*) On 3 years probation for permanent and pensionable employment. Pension (non-contributory) is at rate of 1/600th of final pensionable emoluments for each completed month of reckonable service.

(*b*) From the National Health Service. Candidate may leave but retain superannuation rights up to 6 years and receive gratuity (taxable) of 20% of the aggregate of salary. Salary for officer appointed under (*a*) or (*b*) ranges from £1128 to £1950 p.a., or

(*c*) On short-term contract (2 tours each of 18–24 months) with salary of £1338–£2286; gratuity (taxable) of £37 10s. for each completed period of 3 months service (including leave).

Officer appointed under (*a*) or (*c*) is required to contribute to a Widows' and Orphans' Pension Scheme.

Quarters at low rental. Free return passages for Officer and wife. Return passages for children, to age 18, provided this does not exceed cost of 2 adult return passages in any 1 tour of service. Children's (separate domicile) allowance of £75 a year for each child under 18, ceasing if children join parents in Nigeria. Income-tax at low local rates. Local leave permissible and generous home leave after each tour.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD.117/14/020).

WARWICKSHIRE COUNTY COUNCIL. County Medical OFFICER OF HEALTH'S DEPARTMENT. Applications are invited from registered medical practitioners for the permanent appointment of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH (Male or Female). Preference will be given to those holding the D.P.H. or D.C.H. and with previous experience. Conditions of service and salary (£1050–£1475) will be in accordance with the Whitley Council. The successful candidate will be required to provide a motor-car in the performance of duties, for which Whitley Council scale allowances are payable.

Further particulars, including details of area and duties, and application forms may be obtained from the County Medical Officer of Health, Shire Hall, Warwick. Closing date for applications is 10th December, 1956.

L. EDGAR STEPHENS, Clerk of the Council.

Shire Hall, Warwick, 31st October, 1956.

HER MAJESTY'S OVERSEA SERVICE. Kenya. Medical OFFICERS with qualifications registrable in United Kingdom required for general duties. Successful candidates may be posted to any station in Kenya. During earlier years of service an officer will be expected to carry out general medical and surgical duties including varying amount of public-health administration. In most stations, even if remote from the larger towns, it is possible to maintain interest in any particular branch of medicine or surgery, to which the officer is attracted. The work of every medical officer is based on a hospital which may vary in size and facilities from small district hospital, meeting needs of comparatively primitive community, to large and modern provincial hospital. Appointments can be made on permanent basis with pension (non-contributory), or on short-term contract with gratuity (taxable) payable on satisfactory completion of service. Normal retiring age is 55. Salary ranges from £1284 to £2115 a year, starting point determined by experience. 4 extra increments given to successful candidates possessing the F.R.C.S., M.R.C.P., D.P.H., or other approved higher qualifications. Permanent Medical Officers are eligible to be considered at any time for promotion to super-scale posts in Kenya and other territories in medical administrations or, if they possess higher qualification and suitable experience, in specialist posts. Quarters at rental varying from £30 to £78 a year according to size and type, and furniture at rate varying from £15 to £36 a year. Free passages in both directions for Officer and wife and up to cost of 1 adult fare for children. Taxation at local rates. Annual local leave permissible and generous home leave granted after each tour of from 24 to 45 months. Educational facilities available.

Application forms from Director of Recruitment, Colonial Office, Great Smith-street, London, S.W.1 (quoting No. BCD. 117/7/02).

HER MAJESTY'S OVERSEA SERVICE. Swaziland GOVERNMENT. MALARIA MEDICAL OFFICER required. Applicants should have medical qualifications registrable in the United Kingdom, possess a sound knowledge of the protozoology and entomology connected with Malaria, and have some experience in modern malaria control methods. Some experience in clinical pathology would be an advantage; there is a small public-health laboratory under the Malaria Medical Officer's control.

Appointment on 3 year contract in first instance with prospects of appointment to pensionable establishment. Salary scale from £940 to £1515 a year, entry point dependent on experience. A gratuity of £450 payable on satisfactory completion of contract if not established. There are the following non-pensionable allowances :—

(*a*) Cost-of-living allowance at the rate of 12% of salary up to a maximum of £132 a year for married officer and half this rate for single officer.

(*b*) £150 a year in lieu of private practice.

A doctor in the National Health Service may leave the National Health Service but retain his superannuation rights (up to limit of 6 years) and receive a gratuity (taxable) of 20% of his aggregate salary after engagement. Furnished quarters, if available, provided at rental of 10% of salary. Free return passages for Officer and family.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD.117/76/05).

MINISTRY OF PENSIONS AND NATIONAL INSURANCE. PNEUMOCONIOSIS MEDICAL OFFICERS. The Civil Service Commissioners invite applications for 6 pensionable posts for Men and Women aged 28 or more on 1st October, 1956. Interviews in London, in December. Candidates must be registered medical practitioners, with a special interest and experience in chest work. Those appointed will be members of Pneumoconiosis Medical Panels. Duties will include clinical examination of claimants to disablement benefit and supervision of radiographical work. Starting salary (London) from £1650 at age 35 (lower for those under 35) to £2050 at 40. Somewhat lower outside London. Exceptionally, a candidate age 40 or over on entry may receive starting pay above £2050, according to qualifications and experience. Scale maximum £2250. Non-contributory pension and gratuity. 5-day week in general.

Further information on these and other posts and application form from Secretary, Civil Service Commission, 6, Burlington-gardens, London, W.1, quoting No. 537/56/7. Application forms to be returned by 27th November, 1956.

MINISTRY OF HEALTH AND WELSH BOARD OF HEALTH. MEDICAL OFFICERS. The Civil Service Commissioners invite applications from Men and Women aged 28 or more on 1st October, 1956, for the following pensionable posts : 6 Regional Medical Officers in the Ministry of Health, 1 Regional Medical Officer in the Welsh Board of Health. Interviews in London, in December. Candidates must be registered medical practitioners and must have had good clinical experience and a wide experience of general practice. Experience in medical boarding, or occupational health an advantage. For the post in the Welsh Board of Health a knowledge of the Welsh language is desirable. The work is mainly examining insured persons' incapacity for work, examining persons under the Disabled Persons (Employment) Act, 1944, and administrative duties arising out of the National Health Service. Starting salary (London) from £1650 at age 35 (lower for those under 35) to £2050 at 40. Exceptionally, a candidate age 40 or over on entry may receive starting pay above £2050 according to qualifications and experience. Scale maximum £2250. Somewhat lower outside London. Promotion prospects. Non-contributory pension and gratuity. 5-day week in general.

Further information on these and other posts and application form from Secretary, Civil Service Commission, 6, Burlington-gardens, London, W.1, quoting No. 537/56/7. Application forms to be returned by 27th November, 1956.

GOVERNMENT OF TRINIDAD. **Applications invited** from doctors with medical qualifications registrable in the United Kingdom for the following posts :—

PATHOLOGIST (Grade A) to work under Supervisor of Laboratories, undertake responsibility for all technical methods and processes used in examination of specimens and patients in various Pathological Laboratories under Government control ; act as Senior Pathologist in absence of Supervisor of Laboratories and in that capacity undertake administrative duties and financial responsibilities as circumstances require. Higher qualification in pathology required plus 5 years whole-time practice of pathology and experience in morbid anatomy and morbid histology.

Salary scale : $7200–$7680 (£1500–£1600 a year). Consulting practice permitted or allowance of £200 a year paid in lieu.

PATHOLOGIST (Grade B) to assist Senior Pathologist in pathological and bacteriological work including anatomy and post mortem. Qualification in pathology or bacteriology required plus at least 3 years postgraduate experience. Candidates without D.C.P. or Dip. Bact. should have at least 6 years postgraduate experience.

Salary scale : $6720–$7200 (£1400–£1500 a year).

Candidates in the National Health Service may leave but retain their superannuation rights (up to 6 years) and receive a gratuity of 20% of aggregate of their salaries on completion of engagement.

Government quarters if available at low rental or an allowance in lieu. Free passages for Officer and family not exceeding 5 persons in all on first appointment and not exceeding 3 adult fares on leave. Income-tax at local rates. Generous leave. Educational facilities available.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD.117/38/017).

NORTHAMPTONSHIRE. **Applications are invited from** registered medical practitioners holding a D.P.H. for the appointment of DISTRICT MEDICAL OFFICER OF HEALTH for the Borough of Daventry and the Rural Districts of Brixworth and Daventry AND ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH for the same area. The Officer will act under the County Medical Officer of Health as Assistant County Medical Officer. The salary scales are (i) for the post of Medical Officer of Health for the District Councils : £920–£1030 p.a., and (ii) Assistant County Medical Officer : £656–£922 p.a. A travelling allowance will be paid on the scale from time to time approved by the County Council. Office accommodation and clerical assistance will be provided. The appointment is subject to (*a*) the Local Government Act, 1933, and the Sanitary Officers (Outside London) Regulations, 1935 and 1951, (*b*) the Local Government Superannuation Acts, and (*c*) the passing of a medical examination. The Officer will be required to devote his whole time to the duties of the appointment, to reside within the area for which he acts and to discharge the obligations imposed on a District Medical Officer of Health by the relevant Acts, Orders and Regulations. As regards the duties of District Medical Officer of Health, the Officer will be subject to the control and direction of the several Councils. The appointment will be determinable upon 3 months notice on either side.

Applications, stating age, qualifications and experience, with the names of 3 referees, should reach the Clerk of the County Council by 26th November, 1956.

J. ALAN TURNER, Clerk of the County Council.

County Hall, Northampton.

PRISON COMMISSION. **Medical Officers.** **The Civil** Service Commissioners invite applications for 4 pensionable posts for Men aged 28 or more on 1st October, 1956. Interviews in London, in December. Candidates must be registered medical practitioners, preferably with experience in psychological medicine. D.P.M. not essential, but an advantage. The work of Medical Officers is mainly clinical ; they are responsible for the physical and mental health of persons in custody, the supervision of the hospital and general hygiene of the establishment ; the provision of medical and psychiatric reports is an important aspect of their work and in many establishments they are called upon to give evidence in the criminal courts. There is opportunity for research into the medical problems associated with crime. Starting salary (London) from £1650 at age 35 (lower for those under 35) to £2050 at 40. Exceptionally, a candidate age 40 or over on entry may receive starting pay above £2050 according to qualifications and experience. Scale maximum £2250. Somewhat lower outside London. Promotion prospects. Non-contributory pension and gratuity.

Further information on these and other posts and application form from Secretary, Civil Service Commission, 6, Burlington-gardens, London, W.1, quoting No. 537/56/7. Application forms to be returned by 27th November, 1956.

THE MEDICAL SERVICE OF THE ROYAL NAVY

VACANCIES FOR MEDICAL OFFICERS

Candidates are invited for Short Service Commissions of 3 years, on termination of which a gratuity of £450 (tax free) is payable. Ample opportunity is granted for transfer to Permanent Commissions on completion of 1 year's total service. Officers so transferred are paid instead a grant of £1500 (taxable).

All entrants are required to be British subjects whose parents are British subjects, to be medically fit, and to pass an interview.

Full particulars from the Admiralty Medical Department, Queen Anne's Mansions, St. James's Park, London, S.W.1.

SURREY COUNTY COUNCIL. **Appointment of Assistant** MEDICAL OFFICER (Male). Applications are invited from candidates possessing the D.P.H. or D.C.H. Main duties will be in connection with the School Health and Maternity and Child Welfare Services. Salary according to experience on the scale £1050–£50–£1200–£55–£1475 p.a. The appointment is subject to satisfactory medical examination, to the provisions of the Local Government Superannuation Acts, 1937–1953, and to 3 months notice on either side.

Application form from the County Medical Officer, County Hall, Kingston upon Thames, to be returned by 17th November, 1956.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

EAST DEVON. **Applications are invited for Vacancy** (rural) arising on 1st February, 1957. List approximately 1600 (mainly dispensing). Premises available for purchase. Applications on Form E.C.16A should reach the undersigned not later than first post, 22nd November, 1956. Forms and further details may be obtained on request.

H. BELL, Clerk,
Devon and Exeter Executive Council.

46, Queen-street, Exeter.

Assistant (no view) required at once for Birmingham practice. Must have own car. Furnished accommodation provided. Suit married man, no children. Salary £900 increments £100 per year and proportion of midwifery fees.—Apply : Address, No. 259, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Miscellaneous

Evans Medical Supplies Ltd. **There is a vacancy in the** Medical Information Library for a suitably qualified Man or Woman who can write clear and attractive English. The person appointed will be expected to abstract from the medical journals, compile and edit medical literature for the Company's products, and supervise the Medical Information Library. A qualification in pharmacy or physiology would be an asset ; an understanding of medical terminology and therapeutics is essential. Contributory pension scheme, 5-day week, &c., with good prospects.

Apply in confidence, giving details, to the Pharmaceutical Development Director, Evans Medical Supplies Ltd., Speke, Liverpool, 19.

Imperial Chemical Industries Limited has a vacancy in its Chemotherapeutic Research Laboratories for a Junior Bacteriologist (Male or Female) for which some previous experience in research would be an advantage. Salary according to age and experience. The successful candidate will be required to work in North Manchester initially but will be transferred early in 1957 to new Research Laboratories at present under construction at Alderley Park in Cheshire.—Applications with full particulars should be addressed to Staff Department (S), Imperial Chemical (Pharmaceuticals) Limited, Fulshaw Hall, Wilmslow, Cheshire.

Medical Officer required by Iron Ore Mining Company in West Africa. Should have wide general medical experience, capable of emergency surgery and cæsarean section ; with D.T.M. & H. and experience of tropical practice and hygiene, including antimalarial work. Good hospital facilities. Commencing salary from £1600 p.a., plus 5% bonus plus, for married men, £10 per month marriage allowance and £5 per month children's allowance. Retirement under contributory pension scheme at age 55. Tours of duty are approximately 15 months followed by liberal leave on full salary in U.K. Return passage paid, free furnished quarters and medical attention. Life Assurance and Dependents Income Schemes.—Write, giving full particulars, stating age, married or single, to SIERRA LEONE DEVELOPMENT CO. LTD., Dept. O2, City Gate House, Finsbury-square, London, E.C.2.

British Council requires Editorial Assistant for British Medical Bulletin. Candidates must have interest in and ability to do detailed accurate work, know something of scientific or medical terminology, and be able to type. Medical or scientific experience (secretarial, editorial or library) desirable. Starting salary up to £460 (men) or £424 (women) at age 25 or over, rising to £690 (men), also by stages towards equal pay for women. Typing allowance up to £32 a year if qualified. 5-day week. Pension scheme.—Write, quoting E.9 (56) and enclosing stamped addressed envelope, to Director, Personnel Department, 65, Davies-street, W.1, for further particulars and application form to be returned completed by 20th November, 1956.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

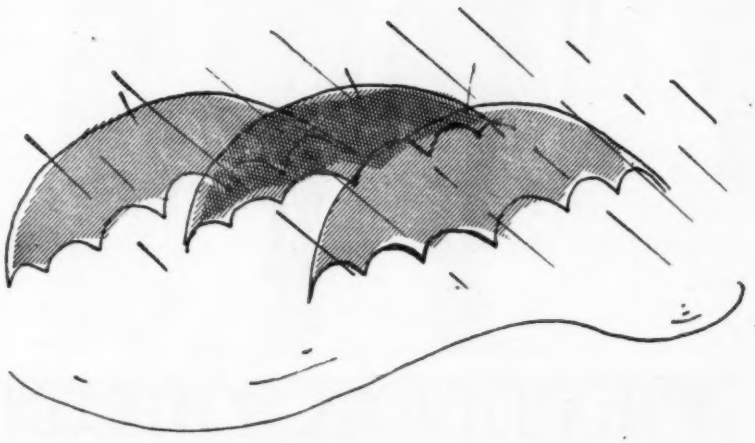
Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

Typewriting and Duplicating. First-class work at moder- ate prices by experienced medical typists. Electric machines. —SYBIL RANG, 21, Heath-street, Hampstead, London, N.W.3 (HAM 5329/0504).

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

Foley Whickham, 4, Royal Hotel Shops, Scarborough, Specialist in 17th Century County Maps. Framed or unframed.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, November 10, 1956.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.



for **Chilblains . . .**

STEROGYL-15

600,000 I.U. VITAMIN D2

oral-massive dose

3 doses

60% success

One ampoule weekly for three consecutive weeks

ALCOHOLIC FOR ADULTS OILY FOR INFANTS

ROUSSEL

843-847 Harrow Road, London, N.W.10. LADbroke 3608

L.5.14

PENTOXYLON

endows the anginal patient with a happy, useful life...

'Pentoxylon'—combining two effective and reliable agents, 'Rauwiloid' and P.E.T.N. in one tablet—provides a more comprehensive therapy for angina pectoris than has hitherto been possible using a single preparation. 'Rauwiloid'—a purified and standardized alkaloidal extract of *Rauwolfia serpentina*—has pronounced tranquillizing, bradycardic and stress-relieving properties; P.E.T.N. (pentaerythrityltetranitrate) is a powerful, long-lasting coronary vasodilator.

'Pentoxylon' not only relieves the coronary spasm, but helps to *prevent* attacks—reducing the apprehension of the patient living in dread of the next onset of pain, and so checking the cycle at its commencement.

- ✻ *Reduces tachycardia*
- ✻ *Increases exercise tolerance*
- ✻ *Reduces nitroglycerin needs*
- ✻ *Allays apprehension and anxiety*
- ✻ *Lowers blood pressure when this is raised*

RIKER

Each 'Pentoxylon' tablet contains 'Rauwiloid' 1 mg. and P.E.T.N. (pentaerythrityltetranitrate) 10 mg. The usual dose is one tablet four times daily always *before* meals. Up to eight tablets daily are well tolerated.

Descriptive literature will be supplied on request.

'Rauwiloid' and 'Pentoxylon' are registered trade-marks. Regd. Users;

RIKER LABORATORIES LIMITED
LOUGHBOROUGH LEICS.